# Racial and Ethnic Differences in Marriage:

# The Importance of Metropolitan Context

by

Laquitta M. Walker

A Dissertation Presented in Partial Fulfillment
of the Requirements for the Degree
Doctor of Philosophy

Approved April 2016 by the
Graduate Supervisory Committee:

Jennifer Glick, Chair
Scott Yabiku
Eileen Díaz McConnell

ARIZONA STATE UNIVERSITY

May 2016

ABSTRACT

Racial and ethnic differences in marriage outcomes are well established in the previous literature. In addition, variation in the social structure in which individuals reside has an impact on the context in which mate selection and marriage occur. The purpose of this dissertation is to determine how these variations shape marriage outcomes for Non-Hispanic Whites, Non-Hispanic Blacks, Hispanics and Non-Hispanic Asians. Beyond racial and ethnic characteristics, this series of studies take into account temporal metropolitan characteristics. Study 1 uses U.S. Census and American Community Survey data to predict metropolitan marriage prevalence at three time points: 1990, 2000 and 2010. Study 2 predicts the odds that individuals across the four racial/ethnic groups have never married, taking into account structural characteristics including region of residence. Study 3 predicts the odds that currently married women are racially or ethnically intermarried, with emphasis on race/ethnicity and region of residence. The results suggest that metropolitan structural characteristics matter somewhat, but individuals' race/ethnicity is the strongest predictor of both the odds of having never married and intermarriage. There is also evidence that region serves as a moderator impacting the overall marriage outcomes of racial/ethnic minority groups to a greater extent in comparison to Non-Hispanic Whites.

DEDICATION

For Elle, my Light. Mommy loves you more than you will ever know.

ACKNOWLEDGMENTS

First and foremost, I thank God, the Creator. God's role in my life is beyond my comprehension, so I will not do God the disservice of attempting to capture the magnitude of my appreciation in an awkward jumble of words. God knows my heart.

I thank my parents. Since I can remember, you have nurtured my curiosity, answering all of my questions (my many, many questions) to the best of their ability, or pointing me to a dictionary, thesaurus, or encyclopedia when needed. You have always believed in and nurtured my intellect, steering me away from the superficial and guiding me toward an appreciation of knowledge. I love you and thank you.

I thank my husband. From our first conversations, you challenged me to think more carefully and to put thought into what I say, how I say it, and how I intend for it to be understood. Though this has driven me crazy at times, it has led to me becoming that much better at expressing my thoughts through words, whether verbal or written. It goes without saying that your emotional support throughout our many years together has been enduring. You have always given me the freedom to bounce the most outrageous ideas off of you, you have embraced my many quirks, and have engaged me in some of my most spirited and passionate debates. I love you and thank you.

I thank my family and friends. I am lucky that I have too many to name, but I greatly appreciate your support.

I thank my committee. I appreciate your support and encouragement throughout this process. I especially thank Dr. Jennifer Glick. Your unconditional support and listening ear helped me get through my most challenging and trying times during this process. Your confidence in my ability has meant so much. Thank you.

TABLE OF CONTENTS

Page

LIST OF TABLES ..... vi

LIST OF FIGURES ..... vii

CHAPTER

1 INTRODUCTION ..... 1

2 LITERATURE REVIEW ..... 5

Non-Hispanic White population ..... 6

Non-Hispanic Black population ..... 7

Hispanic population ..... 8

Non-Hispanic Asian Population ..... 9

Social Structure Theory ..... 10

The Present Research ..... 13

3 DATA AND METHODS ..... 18

Data ..... 20

Methods ..... 35

4 STUDY 1: METROPOLITAN MARRIAGE PREVALENCE 1990-2010 ..... 38

Research Questions and Hypotheses ..... 42

Results ..... 45

Discussion ..... 50

Conclusion ..... 53

TABLE OF CONTENTS

CHAPTER Page

5 STUDY 2: CHARACTERISTICS PREDICTING NEVER MARRIED ..... 55

Research Questions and Hypothese..... 59

Results.....63

Discussion..... 71

Conclusion.....75

6 STUDY 3: CHARACTERISTICS PREDICTING INTERMARRIAGE, 2000..... 77

Research Questions and Hypotheses.....80

Results.....88

Discussion ..... 89

Conclusion.....93

7 CONCLUSION ..... ..... 96

Limitations.....99

REFERENCES..... 104

APPENDIX

A CHAPTER 2 TABLES..... .116

B CHAPTER 3 TABLES.....120

C CHAPTER 4 TABLES.....129

D CHAPTER 5 TABLES.....133

E CHAPTER 6 TABLES.....143

LIST OF TABLES

Table Page

2.1 Racial/Ethnic Distribution by Region, United States .... .....116

2.2 Fastest Growing Metroplitan Areas, 1990-2000 .....117

2.3 Fastest Growing Metropoltian Areas, 2000-201.....118

2.4 Population Change by Region, 1990-2010.....119

3.1 List of Census-Designated Metropolitan Areas..... 120

3.2 Census-Designated Metropolitan Areas by Region..... 124

4.1 Study 1: Descriptive Results.....129

4.2 Multivariate Regression Predicting Marriage Prevalence 1990-2010.....130

5.1 Study 2: Descriptive Results.....133

5.2 Region by Race/Ethnicity , Metropolitan Population.....134

5.3 Sex-Ratios by Race/Ethnicity, Ages 20-34.....135

5.4 Income Segregation by Race/Ethnicity.....136

5.5 Logistic Regression Predicting Never Married, 1990-2010.....137

5.6 Logistic Regression Predicting Never Married (Region)..... 140

5.7 Logistic Regression Predicting Never Married (Sex Ratios)..... 141

5.8 Logistic Regression Predicting Never Married (Income Segregation)..... 142

6.1 Study 3: Descriptive Results.....143

6.2 Share of Young Women Currently Intermarried by Region.....144

6.3 Percentage of Women Currently Intermarried by Race and Region.....145

6.4 Logistic Regression Predicting Intermarriage, 2000..... .....146

6.5 Logistic Regression Predicting Intermarriage (Region).....147

6.6 Logistic Regression Predicting Intermarriage (Race/Region Interactions).....148

LIST OF FIGURES

Figure Page

2.1 Probability of First Marriage by Age 35 .....17

# CHAPTER 1

## INTRODUCTION

In the United States, marriage and marital trends are ongoing topics of interest as they have a number of social and economic implications (Cherlin 2009; Mather & Levery 2013; Sietz, Rios-Rull, & Tanaka 2013). These changes in marital behavior over recent decades have resulted in a marked increase in the proportion of the population that has never married (Cherlin 2009; Taylor et al. 2010; Banks 2011). This change is present across all racial/ethnic groups, though there is considerable variation (Cherlin 2009). Prior studies have suggested that there are consequences to delaying or foregoing marriage, which includes an increase in out of wedlock childbearing and increases in the proportion of women and children that live in poverty (Bumpass & Lu 2000; Cherlin 2009; Dixon 2009; Banks 2011). From a public health perspective, there is some evidence that suggests an association between the decline in marriage and the increase in the prevalence of sexually transmitted infections such as herpes and HIV (Adimora et al. 2002; Banks 2011). Other studies point to the beneficial gains from marriage, which include "enforceable trust" (Cherlin 2004; p. 854), social status, economic stability, and reductions in alcoholism and drug use (Lillard & Waite 1995; Waite & Gallagher 2000; Huston & Melz 2004).

Historically, the purpose of marriage has changed. In the past, marriage was largely an economic institution whereby childbearing and childrearing occurred. Because of its primary economic function, coupled with the limitations placed on women seeking market labor or higher levels of education, marriage was nearly ubiquitous (Cherlin 2009). Up until the 1970s, men typically had higher levels of education in comparison to their wives and in cases where the wife participated in market labor husbands typically earned higher wages (Cherlin 2009; Wang, Parker, & Taylor 2013).

Since the 1970s there have been a number of economic and ideational changes that have changed marriage and consequently family dynamics. Andrew Cherlin (2009) posits that one of the most important shifts is the individual quest for self-fulfillment. Many people view marriage as an extension of this quest and expect marriage to accommodate the goal of self-fulfillment and happiness. In other words, as more women have access to economic independence, marriage has become less about economic necessity and more about personal happiness and fulfillment for both men and women (Cherlin 2009).

The move away from stringent social expectations that marriage would occur in early adulthood (and as the only socially acceptable arrangement for childbearing), along with the rise in educational attainment for women, and the increase in economic independence that is linked to educational attainment, is tied to an ongoing and complex transformation regarding family organization. The results are the characteristics that we observe in the current period where 23 percent of men and 17 percent of women ages 25 and older have never been married (Wang & Parker 2014). To compare, in 1960, 10 percent of men and 8 percent of women had never married (Wang & Parker 2014). What is clear is that marriage has been redefined for many as an optional institution, while other alternatives have increased in prevalence including singlehood and cohabitation (Cherlin 2004; Raley, Sweeney & Wondra 2015). This dissertation will focus solely on the institution of marriage and marriage prevalence.

The aim of this dissertation is to determine if certain features of metropolitan areas, or social structures, have a relationship to marriage prevalence, individual marital status, and intermarriage among the currently married population. The consideration of structural factors as they relate to marriage is important as this focus can provide further insight as to how the larger environment in which individuals reside shape demographic

behaviors, especially during the current period where there are shifting internal migration patterns and pervasive changes in racial/ethnic metropolitan composition (Blau, 1994; Frey 2006; Iceland, Sharp & Timberlake 2013). Structurally, metropolitan areas are representative of marriage markets as they largely represent the labor markets and areas in which increasingly mobile young populations work and participate in leisure activities. Related studies have used metropolitan areas as units of analysis (Fossett & Kiecolt 1991; Lichter, Anderson & Hayward 1995; Hou, Wu, Schimmele & Myles 2015). Metropolitan areas are also representative of Blau's (1994) concept of the macrostructure (or simply social structure), as these contexts interact in complex ways with the individuals that reside within them. Accordingly, social structures can have a differential impact on a number of individual processes including the transition to marriage.

The three studies that comprise this dissertation make a contribution to the marriage literature through their focus on the relationship between contextual characteristics (social structure) and marriage outcomes across metropolitan areas during the 1990 to 2010 period. In addition to taking advantage of the availability of temporal data, this is also one of few studies that go beyond the comparison of two demographic groups, by comparing across the four largest racial/ethnic groups in the United States.

In the chapters that follow, I examine three related aspects of marriage and marriage prevalence. I argue that metropolitan characteristics serve as a proxy for Blau's concept of the social structure, having an impact on partner searches and union formation across the various metropolitan contexts within the United States. The following chapters are a set of three studies that emphasize race/ethnicity, social structure or context, and marriage measuring these relationships in different ways. First,

Study 1 (Chapter 4) will estimate the relationship between contextual characteristics and marriage prevalence for U.S. metropolitan areas. Study 1 will use metropolitan-level indicators to determine their impact on metropolitan-level marriage prevalence across 190 metropolitan areas in the United States. Temporally, this study will compare this relationship in 1990, 2000 and 2010. Study 2 (Chapter 5) will turn to the relationship between structural characteristics and marriage outcomes for young adults residing in a select group of metropolitan areas. Finally, Study 3estimates models to predict intermarriage in a sample of currently married young women, taking into account differences in metropolitan structural compositions. This dissertation's focus on both structural context and individuals offers a contribution to the extant literature grounded in social structural theory.

## CHAPTER 2

## LITERATURE REVIEW

According to Andrew Cherlin (2009), most Americans will marry at some point in their lives. Compared to industrialized countries, the United States stands out as it has one of the highest rates of marriage prevalence (Cherlin 2009). There have been some major shifts in the past 30 years, particularly with the increase in the educational and economic achievement of women relative to men, and as overall declines in religiosity (Oppenheimer 1994; Isen & Stevenson 2010; Schwadel 2013; Smith 2015). Each of these processes would seemingly dampen the centrality of marriage as a key transitional milestone in adulthood. Yet, according to a 2010Pew Research survey, nearly 60 percent of never married respondents still desire to marry (Cohn et al. 2011; Elliott, Krivickas, Brault & Kreider, 2012). If marriage occurs, demographic factors such as race, educational attainment, economic standing, and age affect the timing of marriage (Martin 2004; Cherlin, 2009).

Aside from the emphasis on change over time, the current study emphasizes differences (or similarities) across the four largest racial and ethnic groups in the United States according to the U.S. Census Bureau: Non-Hispanic White, Non-Hispanic Black, Non-Hispanic Asian and Hispanic origin of any race (treated as a distinct category for the purposes of this dissertation) (Humes, Jones, & Ramirez 2011). While overall marriage rates generally have been declining over time from a peak of 16 per 1,000 people in the period immediately following World War II, to the current rate of 6.9 per 1,000 in 2014, the decline has not been uniform across populations (Centers for Disease Control National Center for Health Statistics 2015; Copen, Daniels, Vespa, & Mosher 2012). For instance, in 2002, the percentage of Non-Hispanic Whites between the ages of 25-44 who had ever married was 83.7 percent for women and 74.0 percent for men.

To compare, the percentage of Black women and men who had ever married was 56.2 percent and 62.1 percent, respectively (Copen et al. 2012). A number of mechanisms temper these differences, including geography, educational attainment, employment, and the presence of same-race potential partners within geographies.

Using data from the National Survey of Family Growth, Copen and colleagues (2012) have also found that the probability of first marriage by age 35 varies substantially by race and Hispanic origin (Figure 2.1). For instance, Non-Hispanic White, Asian and foreign-born Hispanic women each had probabilities of first marriage before 35 above 80 percent (Copen et al. 2012). In comparison, U.S. born Hispanic women and Non-Hispanic Black women had substantially lower probabilities of marriage before age 35 (68 percent and 58 percent, respectively) (Copen et al. 2012). The differences in marriage probabilities highlight the differences present across subpopulations and underscore the importance of evaluating racial/ethnic differences in first marriages. These sharp differences drive the current research and will contribute by adding spatial and structural components.

**Non-Hispanic White Population**

In general, the overall defining factors in Non-Hispanic White marriage patterns since 1990 has been an increase in age at first marriage, an increase in cohabitation rates, a decline followed by stabilization of the divorce rate, and a slow increase in the proportion of new marriages that are interracial marriages (Copen et al. 2012; Walker 2016). The growth in the proportion of the college educated population drives the age at first marriage, especially for young women (Oppenheimer 1988; Martin 2004; Elliot et al. 2012). For Whites, the age at first marriage increased from 20.5 years in 1950 to 26.4 years in 2010 (Elliot et al. 2012). For young men during the period between 1950 and 2010, the median age at first marriage rose from 24.0 years to 27.8 years (Elliot et al.

2012). Regardless of the delay in marriage, most Non-Hispanic White men and women will marry at least once during the course of their lives. The proportion of Whites that have "never married" is driven mostly by the delay in age at first marriage as opposed to a retreat from marriage altogether (Cherlin 2009; Copen et al. 2012).

**Non-Hispanic Black Population**

Cultural differences are attached to some of the racial/ethnic differences in marriage. For example, one explanation describes the African American decline in marriage as an extension of the matriarchal household structure found in some West and Central African societies culturally imported during the period of African enslavement in the United States (Frazier 1939; Cherlin 2009). This argument posits that since marriage was forbidden between enslaved men and women, a matriarchal household structure dominated Black families and has endured since emancipation (Frazier 1939). One of the major critiques of this argument is that Black marriage rates were higher than the White marriage rates prior to World War II, thus discrediting the argument of a prevailing matriarchal family structure that originated during the period of American slavery (Frazier 1939; Moynihan 1965; Elliot et al. 2012). An alternative, structural argument posits that African American marriage rates did not begin to diverge from national averages until the 1970s, the same period when many low-skilled manufacturing jobs began to decline in availability (Wilson 1978; 1996). This decline in the availability in jobs may explain the retreat from marriage in the Black population. The disproportionate increase in incarceration rates for Black men has further contributed to the more precipitous decline in marriage rates, in comparison to other racial/ethnic groups (Fitch & Ruggles 2000; Elliott et al. 2012). In addition, the constriction of employment opportunities for men is often in contrast to the increases in educational attainment and economic independence of women (Wang & Parker 2014). In the period

since 1990, metropolitan racial and ethnic compositions have shifted. The current study contributes to the literature on African American marriage patterns by examining how concentrations of various socioeconomic characteristics in metropolitan areas may affect the probability of marriage for young adults.

**Hispanic Population**

The Hispanic-origin population is culturally diverse, comprised of several different groups with origins in Latin America and the Caribbean. Unlike Non-Hispanic Blacks, Asians, or Whites, the Hispanic category according to the U.S. Census is comprised of *any* individuals whose cultural background has Spanish or Latin American origins, regardless of race (Ennis, Rios-Vargas & Albert 2011). In other words, it is geographic and/or culturally centered. Currently, the Hispanic population in the United States is largely of Mexican origin, comprising about 63 percent of the Hispanic population in 2010 (Ennis, Rios-Vargas, & Albert 2011; Frey 2011).

Hispanics in the United States have relatively high marriage rates, even though as a group they are economically disadvantaged (Cherlin 2009; Oropesa & Landale 2004). This is partly driven by the nativity factor, as foreign-born Hispanics have higher marriage rates when compared to their U.S. born counterparts (Oropesa & Landale 2004; Cherlin 2009; Elliott et al. 2012). Aside from nativity, there are additional within group differences. For instance, Cuban Americans have relatively high rates of marriage while other groups, such as Puerto Ricans, have marriage rates that are much lower, and more similar to non-Hispanic Whites (Cherlin 2009, pp.172-173). Due to data limitations and its cross-sectional structure, Hispanic-origin in the current study will function as a distinct group, though it is acknowledged that individuals of Hispanic origin vary greatly in racial and cultural origin (Liebler, Rastogi, Fernandez, Noon & Ennis 2014). The current study contributes to the literature regarding the marriage

patterns of the Hispanic-origin population. Focus on this population is important as it is the second fastest growing racial/ethnic group in the United States (Bernstein 2013).

**Non-Hispanic Asian Population**

According to the U.S. Census Bureau, "'Asian' refers to a person having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent, including, for example, Cambodia, China, India, Japan, Korea, Malaysia, Pakistan, the Philippine Islands, Thailand, and Vietnam" (Hoeffel, Rastiogi, Ouk Kim, Shahid 2012, p. 2). The Asian population is often overlooked in the marriage literature, with the exception of intermarriage (Kalmijn 1998; Qian, Blair & Ruf 2001; Qian & Lichter 2011). For instance Qian, Blair & Ruf Lichter (2001) find that one of the pathways to assimilation into American society for Asian populations over time has been intermarriage with Americans, especially intermarriage between Asian women and White men. Consistent with this finding, earlier work by Lee and Yamanaka (1990) found that in 1980, nearly 25 percent of all Asian marriages were intermarriages. In the years since Lee and Yamanka's work, Asian intermarriage is projected to remain high, but is slowly declining (Qian, Blair, & Ruf 2001; Wang & Taylor 2012). In the period between 2010 and 2013, the share of Asian newlyweds that intermarried declined from 30.5 percent to 27.7 percent (Wang & Taylor 2012). The growth of Asian immigration has likely been a factor in the decline of intermarriage among Asians, as the pool of in-group eligible partners has increased (Qian & Lichter 2007; Wang & Taylor 2012).

Further complicating the discussion on marriage is what denotes "intermarriage". Some studies collapse "Asian/Asian American" into a pan-ethnic measure, while other studies conduct analyses by ethnic group or national origin (Qian, Blar & Ruf 2001). It is within the latter set of studies that the complexity of who marries whom is teased out. In a study based on 1990 U.S. Census data, Qian, Blar, and Ruf (2001) found that Japanese

and Filipino Americans are most likely to marry Whites while Southeast Asians and Asian Indians are the least likely (Qian et al. 2001). Furthermore, the authors found that generational status mattered: the likelihood of intermarriage increased with generational duration in the United States (Qian et al. 2001). This finding is not unique to Asian Americans, as similar findings have been noted for the Hispanic origin population (Wang 2015). The current study contributes to an oft-ignored population's marriage patterns, aside from a primary focus on the intermarriage aspect that is at the core of much of the previous research on Asian marriage patterns within the United States.

**Social Structure Theory**

Social structure, as Blau states, is "groups or strata that can be distinguished on the basis of many dimensions, for example by the population's distribution in age, education, social class, and ethnic affiliation. Any one of these differences among people is an aspect of social structure and "the degree to which various differences are related is a particularly important structural aspect" (Blau p. x, 1994).

In addition to the characteristics of individuals, the structure in which individuals are embedded is critical. For instance, individuals residing in metropolitan areas in the West are the most likely to intermarry (Wang 2012). This region also has the highest proportion of individuals that identify as multi-racial (more than one race) (Humes, Jones & Ramirez 2012). This is the result of a relatively strong legacy of social acceptance of interracial relationships, and underscores the importance of social structure (in this case, region) in understanding the variation in marital status across groups over time throughout the United States. Similar to the specificity of various racial/ethnic characteristics regarding marriage, geography is an aggregate-level characteristic that has been found to indirectly relate to marriage patterns, since various metropolitan areas contains populations with different characteristics and social norms (Wang 2012).

Underscoring the differences in metropolitan characteristics, Lichter, Anderson & Hayward (1995) find that it is the features of local marriage markets that matter since aggregate (i.e. national) estimations often predict marriage formation patterns without considering how local markets impact potential marriage prospects. The compositional characteristics of these local markets determine the conditions under which mate selection occurs (Lichter et al. 1995; McClendon, Kuo & Raley 2014). Consistent with Peter Blau's concept of social structure, Lichter et al. (1995) states, "[it] is not always appreciated that assortative mating is affected by…the population composition or competitiveness of *local* marriage markets" (p.415). In other words, the types of individuals available determine the strength of the marriage market for a given single person. For instance, a marriage market or metropolitan area with a high proportion of married men and a high proportion of unemployed single men is less advantageous for a single woman (Wilson 1987; Wilson 1996; Lichter et al. 1995; Wang 2014). The racial/ethnic composition is an important indicator of the number of potential mates for a given individual since racial homogamy is overwhelmingly characteristic of U.S. marriage patterns (Lichter et al. 1995; Cherlin 2009; Wang 2012). Table 2.1 demonstrates how regions differ in their racial/ethnic compositions.

If differences in potential marriage partners vary by region, then this could be, at least partially, a consequence of the structural changes in population size and composition that occurred throughout the 20 year period of study. Tables 2.2 and 2.3 show that the South and West regions contained the fastest growing metropolitan areas during the 1990 to 2000 period (Table 2.2) and during the 2000 to 2010 period (Table 2.3). Table 2.4 displays the fastest growing regions between 1990 and 2010. The South had a population increase of 25.4 percent, while the West experienced a 26.6 percent increase during the period of study. The Midwest population increased by just 10.8

percent and the Northeast had the smallest increase of 8.1 percent. This dissertation contributes to the current literature in that it joins social structure with individual social behavior by accounting for the geographic location of the metropolitan area where the respondents reside in the sample.

Social Structure

Both metropolitan areas and region represent differences in local social ecology and therefore variations in social structure. They also may tend to be selective of people that share similar characteristics. For instance, some metropolitan areas have a higher proportion of people with high educational attainment in comparison to other metropolitan areas (for example, the San Francisco metropolitan area compared to the Modesto metropolitan area) (Berube, 2012). Some areas may also be more likely to accept and therefore contain more intermarriages for the aforementioned reasons. With the exception of Asians, intermarriage is on the rise for all groups (Wang 2012). Even with its increase in prevalence, intermarriage is still relatively rare, though social acceptance and contact with other groups may serve as a pathway for its continued growth. Qian (1997) determines the difference in educational assortative mating along the axis of race, specifically looking and educational homogamy and intermarriage. Using U.S. Census data, he finds that interracial marriages are more likely to be educationally homogamous (Qian, 1997).

At the aggregate level, the composition of local marriage markets has an impact on marriage beyond any individual level characteristics (Wilson 1996; Lewis and Oppenheimer 2000). Using data from the National Longitudinal Survey of Youth, Lewis and Oppenheimer (2000) find that the chance that individuals "marry down" is supported in marriage markets where high levels of educational attainment are relatively "sparse" (Oppenheimer and Lewis, p. 37). They also find differences between men and

women, with women having higher chances of marrying down as their age increases, but it is not clear if women would rather "opt out" of marriage in markets where there was less of chance of marrying a partner of a similar educational background. This is important because the gap between men and women's educational attainment varies by race/ethnicity and this has implications for marriage outcomes and current marital status. Metropolitan areas attract younger and presumably educated residents based on the local employment markets, which shapes whether individuals are well-positioned to transition into marriage. Metropolitan areas as conceptualized as representative of the social structure capture the aggregate of these favorable or unfavorable marriage market conditions (Oppenheimer 2000; Qian & Lichter 2007).

**The Present Research**

I predicate the studies presented in the analytical chapters on structural theory at the aggregate-level, linked to an underlying assumption of assortative mating preferences. In other words, the assumption in the current research is that when young people (the focal population of this current study) are in the market for a potential marriage partner, they are most attracted to individuals that share characteristics with themselves. The research questions in this dissertation are driven by these factors, and address some of the observations in previous studies regarding assortative mating. While assortative mating and the tendency for partner searches to follow an endogamous pattern has been observed across a number of studies, these associations are at the individual or micro level. Keeping in mind this assumption, the central focus of this research are the larger, structural processes, linking how larger metropolitan contexts connect to individual level interactions (in this case, marriage). The relationship between macro and micro processes are informed by Peter Blau's (1977) definition of macrostructure as "multidimensional spaces of social conditions among which people

are distributed and which affect their social relations" (p. 28). The crux of the current research is to examine how the social structures of metropolitan areas shape the marital behavior within them.

**Social structure and marriage prevalence: Studies 1 & 2.** From the social structural perspective, metropolitan areas have varying concentrations of people with similar statuses associated with marriage. These statuses are either achieved (e.g. education or employment) or ascribed (e.g. belonging to the same racial/ethnic group) and therefore, increases the likelihood of interaction with potential partners with similar characteristics presumably leading to higher metropolitan marriage prevalence. Furthermore, the absolute population size and density of metropolitan areas, in comparison to non-metropolitan or rural areas, increases the odds that an unmarried individual encounters someone with desirable characteristics. This should have an impact on the likelihood of interaction with potential partners, thus driving up marriage prevalence amongst this population in a given period. Study 1 takes each of these factors into account, as it predicts metropolitan marriage prevalence based on a number of structural characteristics.

On the other hand, residence in a metropolitan area with lower rates of favorable characteristics should generally contain lower marriage prevalence. Because of various socioeconomic changes during the period of study, this work also makes comparisons over time as a way of gauging how temporal social conditions have influenced marriage prevalence among young adults living in metropolitan areas throughout the United States. Study 2 shifts the focus from solely the structural level, to the marital status of young adults living within these areas.

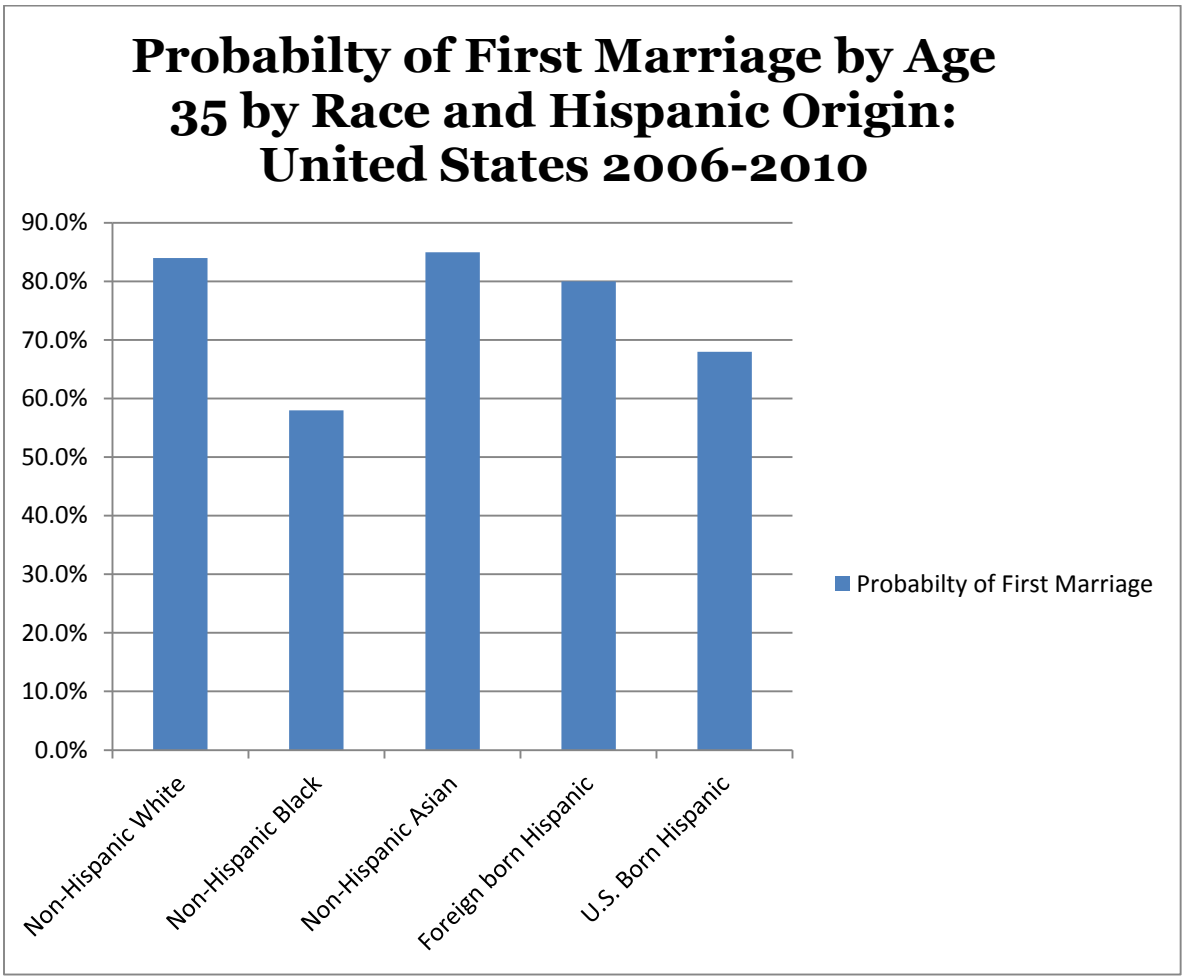
**Social structure and intermarriage: Study 3.** Similar to Study 2, Study 3 extends the relationship between individual and contextual characteristics, and is

grounded in the structural assumption that the presence of a combination of contextual and individual characteristics has some relationship to intermarriage. Study 3 emphasizes that the social context of American society increasingly gives individuals exposure to other groups and that this exposure broadens the marriage market (Lewis & Oppenheimer 2000; Johnson & Jacobson 2005; Qian & Lichter 2011). Along with the increase in exposure are increases in racial tolerance and, for those who choose to marry outside their racial/ethnic group, less hostility from third parties (i.e. family or more formally, anti-miscegenation policies) (Qian & Lichter 2011; Lewis & Oppenheimer 2000). During the 1990 to 2000 period, internal migration patterns led to population growth in the South and West census regions in comparison to slower growth in the Northeast and Midwest regions, respectively (See Table 2.4). The subsequent changes in metropolitan and regional composition may have had an additional impact on the acceptance and prevalence of intermarriage among the young adult population, as certain racial/ethnic groups are less prevalent in certain regions and metropolitan areas in comparison to others (Blau, Blum & Schwartz 1982; Perry & Mackun 2001; Mackun & Wilson 2011). Differences in racial/ethnic distributions in across metropolitan areas are especially salient for racial and ethnic minority populations. Furthermore, the increased contact each group has to out-group populations expands the opportunity for close interracial/interethnic relationships. Based on this approach, the period between 1990 and 2010 should see differences across racial/ethnic groups in interracial/interethnic marriage prevalence.

This dissertation extends the previous work that joins social structural processes to individual-level social behavior through the examination of an important social institution (marriage). The current research also acknowledges change over time and

how changes in social structure have affected marriage prevalence among young adults living in metropolitan areas throughout the United States.

Figure 2.1




Source: Centers for Disease Control/National Survey of Family Growth, 2006-2010
Copen, Daniels, Vespa & Mosher 2012

# CHAPTER 3

## DATA AND METHODS

The purposes of this study are threefold. First, specific characteristics of metropolitan areas are important to understanding the dynamics of marriage prevalence at the aggregate level. The use of census-defined Metropolitan Statistical Areas (MSAs) as representative of marriage markets and local social structure has been well established in the previous literature (Lichter, LeClere & McLaughlin 1991; McLaughlin, Lichter & Johnston 1993; South & Lloyd 1992; Brien 1997; Cooke 2011). This dissertation will adopt a similar approach considering metropolitan areas as an approximation of the geographical boundaries in which individuals typically conduct potential mate searches. In other words, marriage markets approximate the social structure wherein potential mate searches occur. During the period between 1990 and 2010, U.S. metropolitan areas underwent a number of social, economic, and demographic shifts. These changes have not been uniform, as local and regional economies have played an important role. Some metropolitan areas, especially in the South, have experienced substantial population growth, increases in employment opportunities through the diversification of employment sectors, and changes in racial/ethnic composition as different groups migrate to take advantage of these opportunities (Cooke 2011).

Other metropolitan areas have remained relatively stable or have experienced population decline and unemployment spikes. Examples of areas that have undergone population loss are former manufacturing centers such as the Detroit, Flint, and Youngstown (Ohio) metropolitan areas, as well as the New Orleans metropolitan area in the period following Hurricane Katrina (Frey & Singer 2006; Beauregard 2013). Population change can serve as an indicator of a host of social and economic conditions

that have long been linked to marriage rates (Smock 2004; Smock & Manning 2005). Study 1 will use multivariate regression analysis to determine the characteristics that are associated with metropolitan-level marriage prevalence. The models consider demographic, educational, and economic factors as approximations of social structure that theoretically impact marriage prevalence in metropolitan areas. These analyses will demonstrate the extent to which certain structural factors are consistently associated with marriage during the 20 year period of study.

Since social structure is an important element associated with an institution such as marriage (Lichter, McClere & McLaughlin 1991; Trent & South 2003), the next step is to consider the extent to which metropolitan level characteristics are also associated with individual marriage behavior. Using logistic regression, the second analytical chapter, or Study 2, will predict the odds that young adults are currently married, controlling for differences in structural characteristics.

Third, the final analytical chapter, Study 3, further extends the structural framework to predict intermarriage. Since population growth has occurred unevenly across regions, differences in recent growth may indicate differences in not only employment opportunities, but also opportunities to meet potential spouses from various backgrounds. With an emphasis on the race/ethnicity of the respondent and their region of residence, Study 3 presents models examining the role of racial/ethnic and regional characteristics among metropolitan areas to predict racial/ethnic intermarriage among young women in 2000. I accomplish this using logistic regression models to predict the odds that currently married women have a spouse belonging to a different racial/ethnic group.

**Data**

The 1990 5 percent decennial census data originated from households responding to the long-form questionnaire given to approximately one-sixth of all households with nearly identical procedures in the 2000 decennial sampling design (King et al. 2010). Each sample uses person and household weights, which account for both differences in nonresponse rates and mixed sampling procedures. In the analyses for this research, I incorporate the appropriate sample weights to adjust for the complex stratified sampling design.

Between 2000 and 2010, the U.S Census Bureau eliminated the use of the long-form questionnaire used in earlier censuses, and shifted to the American Community Survey (ACS), with the aim to replace the original census 5% sample with a monthly survey of American households (U.S. Census Bureau 2013). The American Community Survey is comprised of approximately 3 million households across the United States and Puerto Rico and follows the sample design from the 2000 census long-form questionnaire. The weights that are included with the American Community Survey are available at both the individual and household levels and "adjust for the missed geographic sampling rates, non-response adjustments, and individual sampling probabilities" (King et al. 2010 pp. 10-12).

A critical part of this dissertation is its focus on the young adult population residing in metropolitan areas throughout the United States. The original data source is decennial census and American Community Survey, though the data are accessed through the Minnesota Population Center's Integrated Public Use Microdata Series (IPUMS), Brown University's Longitudinal Tract Database (LTDB) and the U.S. Census Summary File 3 population tables. Both the IPUMS and the LTDB rely on historical decennial census data and the 2006-2010 ACS to provide users with sample variables for

a variety of measures. The Census Summary File 3 tables provide metropolitan age and sex data for each racial/ethnic group included in this study. The IPUMS, LTDB, and U.S. Census are each nationally representative data sources of the entire United States population and offer the best available information to accomplish the research goals of this dissertation.

**Integrated Public Use Microdata Series.** The Integrated Public Use Microdata Series (IPUMS) project harmonizes variables based on decennial census and ACS questionnaires. Variable harmonization increases the efficiency with which researchers can analyze change over time since variables are coded to have the same meaning and reflect the same underlying population groups even when question wording or categories change between individual census years. Though census and ACS data are not longitudinal, data from the IPUMS can be used to estimate trends in population-level characteristics and processes based on the repeated cross-sectional data and subsequent surveys (i.e. ACS). The IPUMS includes information about individual demographics, household composition, and the geographic location of the respondent, including their metropolitan residence. The IPUMS also provides the appropriate person-weights to account for the complex stratified sampling design. The use of microdata from the IPUMS has some limitations including changes in the boundaries of some metropolitan areas during the period of study. Because the ACS does not survey all geographies each year, the estimates that the ACS produces are based on averages during the survey period (in this instance 2006-2010).

**U.S. Census Summary File 3.** Data from the decennial census 100 percent age by sex population tables was used to construct the age- specific race-specific sex ratios by metropolitan area. The U.S. Census Bureau publishes tabulated count data by age and sex.. These tables provide total count data for the Non-Hispanic White, Non-

Hispanic Black, Hispanic, and Non-Hispanic Asian populations between the ages of 20 and 34 by metropolitan area.

**Longitudinal Tract Database.** In addition to the data provided from the IPUMS, and the U.S. Census population tables, this study also relies on data from the U.S. 2010 Project's Longitudinal Tract Database (LTDB) supported by Brown University and the Russell Sage Foundation (Logan, Xu & Stults 2012). The LTDB contains geocoded metropolitan level data derived from the census, and provides information on a number of variables, including age, sex, racial/ethnic composition, educational attainment, and employment variables.

The LTDB provides "public-use tools to create estimates within 2010 tract boundaries for any tract-level data (from the census or other sources) that are available for prior years as early as 1970" (Logan, Xu & Stults 2012). In other words the LTDB, like the IPUMS, standardizes a set of population variables across census years to fit 2010 census boundaries. The LTDB's geographic base and aggregate level data distinguishes it from other data sources. The central goal is to provide standardized tract data to allow geographic comparisons over time. Even though the variables are geographically based at the census-tract level, I aggregated the variables to the metropolitan level through the use of crosswalk files provided by the LTDB. Both population and area weights are accounted for and considered to have a "high degree of accuracy" specifically for the 2010 data files (Logan, Xu & Stults 2012).

**Advantages and disadvantages of the data.** There are several unique advantages and disadvantages with using secondary data from the LTDB and the IPUMS. The first advantage is that each source is derived from the U.S. Census and thus offers a sizable representation of the four largest racial/ethnic groups highlighted in this research. This representation includes both individual-level characteristics as well as

characteristics of the places they live. The second advantage is the longitudinal scope of the LTDB which allows the geographic boundaries to remain constant over time. Study 1 are a set of analyses conducted at the metropolitan level and thus, take full advantage of the longitudinal structure of the LTDB database by comparing marriage prevalence across 190 metropolitan areas, over time. A third advantage is the richness of census data. Both the IPUMS and the LTDB provide detailed information for a large cross-section of metropolitan areas nationwide. The majority of the U.S. population (approximately 81 percent) reside in urban areas which are part of metropolitan areas and using this unit of analysis is inclusive of a large share of the 20-34 population across all years in the study (Geographic Reference Manual, U.S. Census Bureau 2012). Finally, the structure of these data allows the statistical testing of the relationship among a host of variables and covers a substantial portion of the U.S. metropolitan young adult population. Together, the use of these data sources provides both a unique and robust dataset contributing to the understanding of how structure and contextual dynamics impact individual processes.

The largest disadvantage is that the U.S. Census and IPUMS data are cross-sectional. Cross-sectional data are useful in comparing period effects, but do not allow researchers to measures the effects for the same individuals within a sample over time. As with past studies, the type of cross-sectional approach used in this dissertation will still reveal how racial and ethnic differences in marriage prevalence have changed for individuals across metropolitan areas over the 20 year period in this analysis.

**Sample selection.** The subsequent chapters vary in their specific aims, and the selected sub-samples for the following chapters reflect the differences in their focus. Chapter 4 (Study 1), which predicts marriage prevalence, uses a sub-sample of 190 metropolitan areas for which individual-level data are available for the subsequent

analysis in Studies 2 and 3. These selected MSAs represent a variety of metropolitan areas, across all regions of the United States.

The analytic individual- level subsample for the analysis in Study 2 (Chapter 5) and Study 3 (Chapter 6) is from the IPUMS 1990 and 2000 Census 5 percent public-use microdata files and the 2006-2010 ACS, excluding Puerto Rico. The Study 2 analytical sample includes all young adults residing in 190 metropolitan areas that were between the ages 20-34 at the time of the survey. The analytical sample only includes individuals that self-identify as Non-Hispanic White, Non-Hispanic Black, Non-Hispanic Asian, and Hispanic. The subsample is Study 3 focuses on one year, 2000, and is comprised of young women between the ages of 20 and 34 who were currently married on April 1, 2000.

Because of differences across census questionnaires regarding the identification of "two or more races", I will exclude this group from all analyses in this dissertation. "Two or more races" was not included as a category until the 2000 census. In prior years, respondents were required to select one race that best describes how they self-identified. In addition to inconsistency across census years, there are also issues with sample size. The number of individuals that identify as multiracial is considerably small in many of the 190 metropolitan areas included, potentially leading to biased estimates. I also exclude the American Indian/Alaskan Native (AIAN) population from these analyses. The AIAN population is small in most metropolitan areas making it difficult to achieve reliable estimates in this study.

The remainder of the data is from the LTDB. The data file is comprised of 72,739 census tracts (the number of tracts in the United States in 2010). For all years, tract-level information was standardized to the meet the 2010 census-tract boundaries. To accomplish this, I used the 1990-2010 and 2000-2010 crosswalk files provided by the

LTDB to bridge the data across these years to standardize the information. This process allowed me to aggregate the census-tract level information up to the metropolitan-level. This simplifies the interpretation of the results since metropolitan boundaries remain constant across years.

In 2010, there were 367 census defined MSAs in the United States. I applied two criteria to determine the metropolitan areas to include in these analyses. First, the metropolitan area had to be a census-designated MSA as of 2010. The U.S. Census Bureau defines an MSA as "a core area containing a substantial population nucleus, together with adjacent communities having a high degree of economic and social integration within that core" (U.S. Census Bureau, 2013).

There are two reasons for including this criterion. The first is that capturing change over time from a geospatial perspective can be a challenge since metropolitan areas that exist in 2010may not have existed as MSAs in 1990 or 2000. Because physical boundaries are not fixed across the period of study, I use 2010 boundaries. Using 2010 boundaries captures metropolitan areas that have experienced population growth and it does not preclude metropolitan areas that have lost population, as MSA designation is permanent. The only exception to its permanency are instances where a metropolitan area is split into two new metropolitan areas, an issue accounted for through the use of 2010 boundaries. The second reason is that the information for the metropolitan area had to be available in each data source (Summary File 3, IPUMS and LTDB) to support the two analytical levels of interest (individual and metropolitan). This criterion excluded many metropolitan areas that had not yet formed by the 2010 census because the IPUMS metropolitan data are largely based on 1990 and 2000 MSA boundaries (Minnesota Population Center, personal communication). Furthermore, the units that represent metropolitan areas in the IPUMS are often not identical to the official MSA

boundaries specified by the U.S. Census Bureau. Many metropolitan areas in the IPUMS data aligned both with Metropolitan Statistical Areas, as well as Micropolitan Statistical Areas and Metropolitan Divisions, which are not equivalent geographic boundaries. Each of these designations holds varying levels of economic and geographic significance, but they are not equivalent. Of the three geographic distinctions, Metropolitan Statistical Areas are the largest economically and spatially. In cases where the metropolitan area designated in the IPUMS data is a part of a larger official MSA, I appended the appropriate MSA-level information to the individual case in the IPUMS file. This reduced the sample size to 190 metropolitan areas from the original 367 MSAs in the 2010 Census. Table 3.1 provides the alphabetical list of the MSAs included in this dissertation.

This analysis omits census-designated MSAs in Puerto Rico. Though Puerto Rico is a U.S. sanctioned territory, its proximity and sociocultural differences make it very different from the mainland United States. Other studies of the United States using census data have also omitted Puerto Rico from their sample (see Glick, Walker, and Luz 2013).

**Creation of the dataset.** In order to answer the research questions raised in this dissertation, I created a dataset that links the metropolitan-level contextual data from the LTDB and the Summary 3 census data files to data from the IPUMS that provides information about the individuals living within metropolitan areas. I append data from these three sources by metropolitan level Core Based Statistical Area (CBSA) codes (one for each MSA) and IPUMS metropolitan areas codes to provide both information about individuals and the characteristics of the larger metropolitan areas in which they reside. This method has been used in other studies that aimed to link geographic context to individual information (see Glick, Walker, & Luz 2012; Wang &

Parker 2014). The next section outlines the variables used in all three studies of this dissertation. Here, I will provide an overview of each of the variables used.

***Study 1.*** The sample used in Study 1 is comprised of data from 190 census-designated MSAs provided by the LTDB.

*Dependent Variable.* Marriage prevalence is a continuous measure that represents metropolitan area marriage prevalence calculated by:

$$\frac{\textit{Number of currently married}_{(15+)}}{\textit{Total population}}$$

This portion of the study will predict metropolitan marriage prevalence in general, and thus incorporate all ages 15 and older. Metropolitan marriage prevalence can act as an indicator of the larger social structure and metropolitan-specific norms or expectations. It is within Study 1 that important metropolitan level indicators are established as representative of social structure.

*Independent Variables.* Each of the metropolitan level covariates are continuous measures that represent proportions of the entire metropolitan population. This study is predicated on differences across racial/ethnic groups in terms of marriage prevalence and the specific case of intermarriage prevalence, thus the racial and ethnic composition of metropolitan areas are the focal independent variables of this study. The racial/ethnic variables for the metropolitan portion of the analysis include the continuous measure for the proportion of the total metropolitan population that is Non-Hispanic White (the percentage of persons of White race, not Hispanic origin), Non-Hispanic Black (the percentage of persons of Black race, not Hispanic origin), Hispanic (of any race), and Asian (the percentage of Asian race), and Hispanic.

*Economic Measures.* Consistent with Blau's theory of social structure explained in Chapter 2, economic measures are a critical part of the larger marriage market and several measures of economic health are included in this analysis. The demands and expectations from certain types of work can impact family roles and family dynamics in metropolitan areas, shaping the expectations in marriage formation within a metropolitan area over time (Greenhaus & Beutell 1985; Sayer 2005). For instance, individuals involved in professional employment may have more flexible schedules, but not have clear boundaries between time allocated for work and time allocated for other activities (i.e. leisure, socializing, etc). Also, the longer hours that professional employment may entail may delay partner searches as young people work to achieve career goals. This may make it more difficult to find time for dating or transitioning to marriage in metropolitan areas where professional employment and salaried positions dominate the area (Oppenheimer, Kalmijn, & Lim 1997; Wang 2014). On the other hand, metropolitan areas where manufacturing jobs are a sizable proportion of employment may indicate depressed wages, a less secure employment or shift work (Wilson & Wouters 2003 Wang; 2014). High proportions of manufacturing jobs may also indicate a range of other social conditions linked to areas that have been particularly affected by the reduction of such positions. Manufacturing jobs dominate some regional local economies, notably in the rustbelt regions of the Midwest and Northeast (Lichter, McLaughlin, & Ribar 2002). The economic measures in this study are proportion employed in the professional, manufacturing, and self-employment sectors, and income segregation. Each of these measures is continuous, ranging in value from 0 to 1.

In the LTDB, the professional sector is defined as the proportion of employees in professional occupations per employed persons age 16 and older. The manufacturing sector is defined as the proportion of employed persons that are manufacturing

employees (by industry). The self-employed sector contains an array of employment categories, including the self-employed working for unincorporated businesses, unpaid family workers, and agricultural workers (U.S. Census Bureau 2015). This variable is included with the goal of capturing agricultural workers as they comprise sizable portions of some of the included metropolitan areas.

In this study I consider income segregation as proxy for the social and economic landscape of metropolitan areas. Similarly, other studies have used income segregation as a socioeconomic and racial barometer (Massey & Denton 1993; Ross, Nobrega & Dunn 2001; Fry & Taylor 2012). According to the manual provided by the LTDB, the data provided for income segregation "describe the extent of family segregation in metropolitan areas. They include several different measure of family income…based on the current [2010] metropolitan boundaries" (Logan, Xu, & Stults 2012; Bischoff & Reardon 2011). Furthermore, Bischoff and Reardon (2011) find that income segregation is a highly useful descriptive measure, as it can serve as an indicator of income inequality and differences in educational attainment at the metropolitan level (Reardon & Bischoff 2011). Economic segregation in this research represents the proportion of families in the metropolitan area that live in poor census tracts (Logan et al. 2012).

*Educational Attainment*. Educational attainment is highly correlated to income segregation and employment (Reardon & Bischoff 2011), and these two characteristics are important in assessing a given marriage market. To account for metropolitan area educational attainment, each of the analyses in the following chapters will account for the proportion of the population that has a high school diploma or less. The LTDB constructs this variable as the proportion of the population ages 25 and older that have a high school degree or less. Though it is not ideal to collapse high school graduate with the population that did not complete a high school education, there is some support that

individuals with at least some college show a significant difference in marital outcomes that those who do not continue beyond high school (Copen et al. 2012; Elliot et al. 2012). Among these differences are differences in median age at first marriage (Copen et al. 2012; Elliot et al. 2012). An additional measure includes the proportion of the metropolitan area with a four year college degree and higher as marriage outcomes have been similarly associated with this population (Schwartz & Mare 2005; Copen et al. 2012).

*Control Variables.* Each set of models include a control for the metropolitan population for the analysis year. The metropolitan area population variable is provided in the LTDB and is included as a control in all statistical models.

***Study 2***. The data for Study 2 are from three sources: the LTDB, IPUMS, and from the decennial census population tables. The LTDB and the IPUMS are used for the 1990, 2000, and 2010 analyses. Specifically, the variables from the LTDB and the census population tables comprise the structural variables and data from the IPUMS provide the individual-level data. The data from the decennial census population tables is only used for 2000.

*Dependent Variable.* Presented as odds-ratios, Study 2 predicts the individual log-odds that young adults have never married. The dependent variable for Study 2 is the nominal outcome of never married versus ever married (the reference category).The never married category includes all young adults, ages 20-34, living in the 190 included metropolitan areas.. Conversely, the ever married category includes all young adults across the 190 metropolitan areas that are currently married, separated, divorced or widowed. The data for the dependent variable is provided by the IPUMS for the years 1990, 2000, and 2010.

*Independent Variables*. The focal independent variables in Study 2 include individual measures for race/ethnicity. The relationship between race/ethnicity and marital status is one of the primary focuses of this dissertation, and similar to the format in Study 1, Study 2 will use an additive approach in determining whether the relationship between the racial/ethnic groups and the dependent variable is sustained with the addition of other potential explanatory factors. The four largest racial/ethnic categories are the focal independent variables for this study: Non-Hispanic White, Non-Hispanic Black, Non-Hispanic Asian, and Hispanic (any race). In order to establish the Hispanic origin category, I recoded individuals of any race that identify as Hispanic into one category.

Study 2 will use the income segregation measure from Study 1 as an independent variable. The coding for metropolitan income segregation is left unchanged from Study 1. As in Study 1, the proportion of the metropolitan population residing in a poor census tract is left as a continuous measure in Study 2. This contextual measure aims to capture the magnitude of poverty concentration across metropolitan areas and how this may be associated with the odds that individuals have never married consistent with social structural theory (Tucker & Mitchell-Kernan 1990; Edin & Reed 2005; Smock, Manning, & Porter 2005).

Sex ratios have been well-documented as an important structural component in the mate selection process (Wilson 1987; Lichter et al. 1995; McClendon et al. 2014). This indicator establishes the number of women per 100 men, ages 20 to 34 within a racial/ethnic group, within a metropolitan area. This variable is necessary to understand the relationship between sex ratios and probability of marriage net of other individual and contextual factors. The use of a racial/ethnic age specific sex ratios accounts for the propensity of individuals to overwhelmingly marry within their own racial/ethnic group

(racial endogamy) and within an age group close to individuals' chronological age (Cherlin 2009).

The final independent variable, metropolitan region of residence, is technically an individual-level indicator, though it is operationalized to represent social structure. The variable region is decomposed into dummy variables comprised of the four census-designated regions: Northeast, South, Midwest, and West. The regions are not equally sized. Table 3.2 provides the listing of metropolitan areas by region. Previous studies suggest that there are differences in family formation by region (Glenn & Shelton 1985; Torr 2011). Other studies have shown that the South has an earlier age at first marriage, and this early transition to marriage may be related to such factors as lower educational attainment and religiosity (Uecker & Stokes 2008). Region is comprised of dummy variables with the South as the reference category.

*Individual-level control variables.* Age is an important characteristic that shapes individual mate selection choices. This study is limited to individuals that are between ages 20 and 34. The selection of this age range is more likely to reflect individuals that, if married, are most likely to be in their first marriage (Qian & Lichter 2007; Cherlin 2009; Shafer & Qian 2010; Elliot & Simmons 2011). The age of the respondent is coded into three demographic categories: 20 to 29, 25 to 29 and 30 to 34. Research suggests that second and higher order marriages are comprised of a select group and thus have different risks associated with marriage and divorce (Cherlin 2009; Whitton, Stanley, Markman & Johnson 2013). Categorical as opposed to continuous measurement of age allows for a simplified interpretation of the coefficients (Morgan & Teachman 1988).

The partner selection of young adults is most likely to be consistent with the models of mate selection and marriage market dynamics highlighted in the previous chapter. Other individual-level control variables include measures for sex (women have

a younger median age at first marriage in comparison to men), nativity (the foreign-born population has higher marriage prevalence in comparison to the native born) and educational attainment (Mare 2007; Elliot et al. 2012), discussed in more detail below.

Prior research has shown that educational attainment has been on the rise over the past several decades (Ryan & Siebens 2012) and educational attainment is increasingly an important factor for both men and women in the mate selection process (Torr 2011; Schwartz & Mare 2012; Musick, Brand & Davis 2012). Educational homogamy has been well documented and mates are often selected based on how similar their educational backgrounds arecompared to a potential partner (Kalmijn 2010; Schwartz 2010; Schwartz & Mare 2012). For this project, education is coded into four categories including those who achieved less than a high school diploma/G.E.D., high school diploma/G.E.D., some college, and Bachelor's degree or greater at the time of the survey. This categorization of educational attainment is of substantive value and is supported by previous literature evaluating marriage outcomes (Torr 2011; Schwartz & Mare 2012; McClendon, Kuo & Raley 2014).

Nativity is an additional factor, especially for the Asian origin and Hispanic origin populations given the higher proportion of individuals in these groups who were born outside the United States. The shorter exposure to the United States for some foreign-born young adults may have an influence on marital behavior (Rumbaut 2004; Lloyd 2006; Elliot & Simmons 2011.)

*Metropolitan-level (structural) controls*. Additional control variables are included as measures for metropolitan characteristics. The variables are many of the same variables formally tested in Study 1, including the proportion of the employed metropolitan population working in the manufacturing, self-employed and professional sectors. Additional controls include metropolitan marriage prevalence and proportion of

the metropolitan area with a high school diploma. Finally, this study controls for the metropolitan population.

***Study 3.*** Study 3 uses data from both the IPUMS and the LTDB for the year 2000. Study 3 is similar to Study 2 as it incorporates both individual and metropolitan structural variables to establish the association between metropolitan characteristics and individual marital outcomes. The sub-sample includes currently married young adult women ages 20 to34 in 2000. The decennial census, the data course for Study 3, is sampled at the household level. Since the long-form decennial census samples households, and spouses typically reside within the same households, the inclusion of both spouses in this set of analyses would result in overestimating the effect of the predictors, leading to biased results. Women are selected since past literature suggests that women are most likely to feel the effects when there is a "marriage squeeze" (Schoen 1983; Crowder & Tolnay 2000; Dixon 2009), have been more affected by changes in their relative status in recent years (Torr 2011), and in some cases, more likely to marry a partner outside of their racial/ethnic group when such conditions arise (Tucker & Mitchell-Kernan 1990).

*Dependent Variable*. Study 3 predicts the log-odds that spouses of currently married female young adults residing in metropolitan areas are from a different racial/ethnic group versus the same racial/ethnic group (reference category). In other words, this study predicts the odds of a heterogamous marriage or racial/ethnic intermarriage. Race/ethnicity of the respondent's spouse is a dichotomous indicator that represents whether or not the spouse is of the same racial/ethnic category as the respondent. The construction of this variable uses household information to determine if the racial/ethnic indicator associated with spouses match. If so, the husband is coded as "same race" representing a racial/ethnic pairing with a spouse of the same background.

If husband and wives belong to different racial/ethnic categories (do not have the same racial/ethnic code in the IPUMS), they are coded as "different race".

*Independent variables.* There are two sets of independent variables that are the primary focus of Study 3. The first set of independent variables is the race/ethnicity indicators. They are coded consistent with the coding in Study 2. The four analytical racial/ethnic categories are Non-Hispanic white, Non-Hispanic Black, Hispanic and Asian. The second independent variable is the respondent's region of residence. Past studies have suggested a number of characteristics associated with intermarriage and region may be an important indicator since there are regional differences in racial/ethnic composition in the United States. As previously explained, each of the 190 metropolitan areas is assigned to a region based on the boundaries established by the U.S. Census Bureau. The four categories are Northeast, Midwest, South and West.

*Control variables*. The control variables in Study 3 are similar to the control variables in Study 2. These analyses will control for individual-level factors such as nativity, educational attainment, and age. It will also control for structural components including metropolitan marriage prevalence, metropolitan educational attainment, and proportions of the metropolitan population employed in each employment sector.

**Research Design and Methods**

The central goal of Study 1 is to predict the social structural factors that are associated with marriage prevalence. Study 1 predicts the relationship between metropolitan racial/ethnic composition and marriage prevalence net of other factors that are associated with marriage prevalence.

In order to accomplish this, I will use Ordinary Least Squares (OLS) regression to determine the relationship between the structural predictors of marriage prevalence in metropolitan areas. I conduct the regression analysis for 1990, 2000, and 2010. The

partial-slope coefficients that OLS regression quantifies the linear relationship between the dependent variable (marriage prevalence) and the focal independent variables, holding all other independent variables in the model constant (McClendon 1994: 60). This relationship is illustrated in the following notation:

$$\hat{Y}=b_0 + b_1X_1+b_2X_2+\varepsilon$$

Where $\hat{Y}$= the predicted value of $y$ (marriage prevalence), $b$=partial regression slope for independent variables $X_i$ and $\varepsilon$= the error term or "the cumulative effect of all causes other than $X_i$" (McClendon 2002, p. 62). One of the benefits of using multiple regression analysis is that it offers a straightforward way to empirically test the theoretical link between marriage prevalence and the structural characteristics of metropolitan areas. OLS regression also allows the dependent variable to remain continuous, an important factor in predicting an n outcome such as metropolitan marriage prevalence (McClendon 2002). One of the limitations of using OLS regression is that it assumes a linear relationship between the dependent variable and the predictor variables. More specifically, it assumes a constant change in the dependent variable relative to the predictor variable which may not always be appropriate and result in biased estimates (Morgan & Teachman 1988). Furthermore, the analyses in Study 1 are unable to establish any possible cause and effect relationship since the data are cross-sectional.

**Analytical Approach for Studies 2 and 3.** The central aims of Studies 2 and 3 are to predict the odds that individuals in the sample belong to one category versus another. In Study 2 (Chapter 5) the dependent variable is never married (versus ever married). In Study 3 (Chapter 6), the hypotheses predict the logs odds than currently married young adult women are married to a spouse of a different race/ethnic category" (versus a spouse of the same race/ethnic category). The best approach when the dependent variables are categorical is logistic regression (Morgan & Teachman 1988;

Powers & Xie 2008). The use of a binary dependent variable in an OLS regression would violate the assumption that the error terms are uncorrelated (Morgan & Teachman 1988; McClendon 2002; Powers & Xie 2008). The assumption of a nonlinear relationship between *x* and *y* is an advantage of using categorical dependent variables. A second advantage of using logistic regression models is that the coefficients are probabilities and therefore the values can only range between 0 and1, keeping interpretation simple. The coefficients refer to the log-odds of the outcome of one category versus a reference category:

$$\text{Logit}\,(P_i)=\log\{P_i/(1-P_i)\}= \alpha + \beta\,'X_i$$

Where *log*= the natural logarithm, $P_i/(1-P_i)$= the ratio of probabilities (the odds), $\alpha$= the intercept parameter, $\beta$= the vector of slope parameters, and $X_i$= the vector of explanatory parameters. By taking the natural log, the results are easily transformed into odds-ratios which provide the additional benefit of easy interpretation and straightforward substantive conclusions. Like Study 1, both Studies 2 and 3 are unable to establish any causal relationship since the data are cross-sectional, but significant coefficients highlight associations that can serve as a basis for further social scientific inquiry.

# CHAPTER 4

## STUDY 1: METROPOLITAN MARRIAGE PREVALENCE 1990-2010

Metropolitan marriage prevalence can gauge the predominance of marriage norms in the local marriage market. The local ecology shapes the norms of the culture in which individual social processes occur, including marriage (Blau, 1977; Lloyd & South 1996; Yabiku 2004; Elliott & Simmons 2011). One goal of this study is to formally test the association between a theoretically motivated set of structural variables, informed by Blau's structural concept, and marriage prevalence across metropolitan areas in the United States. The second goal is to illustrate how the associations between structural characteristics and marriage prevalence have changed over time by analyzing results using data from the 1990 and 2000 U.S. Census and the 2006-2010 American Community Survey.

Past research has examined the impact larger social structures have on marriage outcomes (Blau 1977; Tucker & Mitchell Kernan 1990; Lichter, McLaughlin & Ribar 2002; Yabiku 2004). Despite the similarities that these studies share in their focus on social context, the geographies used to establish the sphere of influence regarding mate selection vary. For instance, in his work examining the marriage timing in Chitwan Valley, Nepal, Yabiku (2004) uses neighborhoods as a unit of analysis to establish contextual boundaries. In other studies larger geographies, such a region of residence, have been used to determine the relationship between regional attributes and the acceptance and/or pursuit of interracial/interethnic marriages (Tucker & Mitchell-Kernan 1990; Kalmijn 1998; Crowder & Tolnay 2000; Qian & Lichter 2011; Wang 2012). The current study uses metropolitan areas as the unit of analysis under the assumption that the majority of potential partner searches occur within these bounds. Past studies have used metropolitan areas as a proxy for marriage markets (Lichter et al. 1995;

McClendon 2014), and the current study will extend on previous uses of this approach with a focus on three strong determinants of the fitness of a particular (metropolitan area): education characteristics, economic characteristics, and the relative size of each of the four major racial/ethnic groups that are of interest in this study. These determinants are well established in the literature and most research focusing on marriage outcomes address these characteristics in their analyses (Wilson 1978; Cherlin 2009; Qian & Lichter 2011).

The proportion of Non-Hispanic Whites, Blacks, Asians, and Hispanics are of central importance in larger discussions of race/ethnicity and their link to social institutions. Race/ethnicity and its link to the institution of marriage are foundational to the current study. Marriage prevalence across geographies is highly variable and the racial/ethnic composition is equally variable (Humes, Jones & Ramirez, 2011). It is not clear if the racial composition of metropolitan areas drive marriage prevalence or if it driven by other factors.

The link between marriage and educational attainment has been well-established (Schwartz & Mare 2005; Greenwood, Guner, Korcharkov & Santos 2012; Copen, et al. 2012). Schwartz & Mare (2005) find that educational assortative mating has been especially prevalent since the 1970s, and that educational intermarriage at the extremes of the educational distribution (between the highly educated and those with relatively low levels of education), have had the sharpest decline (Schwartz & Mare 2005). Further complicating the relationship between educational attainment and marriage is marriage timing. For those with a high school education or less, marriage may occur earlier in the life course. This has been observed specifically in the Non-Hispanic White and Hispanic populations (Lloyd 2006; Uecker & Stokes 2008). For those with the highest levels of

education, the age of first marriage is higher, generally occurring after education is completed (Lloyd & South 1996; Schmidt 2008).

Over time, educational intermarriage has declined, occurring in tandem with women's gains in relative status within marriage markets (Oppenheimer 1997). Throughout most of the 20th century, differences in education were not as an important factor in potential partner searches, assuming that the male partner had a higher level education than the female (Lloyd & South 1996; Cherlin 2009). As specialization in household labor declined for women during the 1970s, potential partner searches began to look similar for both sexes with characteristics such as educational attainment and employment status gaining importance. In others words, the characteristics that men and women looked for in potential mates began to converge, underscoring the tendency for assortative mating based on education. For men and women on the lower end of the educational spectrum, marriage became increasingly difficult to realize as employment opportunities and wages destabilized for this population (Wilson 1978; Edin & Reed 2005; Smock & Manning 2005; Cherlin 2009).

To summarize, educational attainment has become more important to marriage prospects and consequently, marriage prevalence than it has historically. As women's educational attainment has increased, the expectation of who might be considered a potential partner has also shifted. Therefore, educational attainment at the metropolitan level is an important factor that might be associated with metropolitan marriage prevalence. It is expected that there will be a positive association between metropolitan marriage prevalence and educational attainment, and this will serve as a mediator for racial/ethnic composition. Furthermore, the strength of this relationship is expected to increase over time. The present study examines if a significant association is present and

whether changes in this association can be observed throughout the period between 1990 and 2010 across the 190 metropolitan areas in this study.

A closely related characteristic linked to marriage is employment. Educational attainment is closely linked to not only the likelihood of employment, but also the type of employment that dominates a metropolitan area. As previously mentioned, metropolitan areas in the Great Lakes region of the Midwest are more dependent on manufacturing jobs versus other regions, and employment shocks to manufacturing sectors would have different implications regarding unemployment/underemployment and consequently marriage markets (Lichter, McLaughlin, and Ribar 2002). Other metropolitan areas have experienced recent growth in the professional sectors and consequently have attracted more educated young adults to either move to, or remain within, these metropolitan areas. Metros that have experienced recent growth include Houston, Dallas, Charlotte, and Denver (Berube 2012; Wang 2014). In these instances, the marriage market might be more attractive and marriage prevalence may be higher. Accordingly, along with race/ethnicity and educational attainment, this current study estimates the relationship between metropolitan economic characteristics and marriage prevalence.

The relationship between income segregation and marriage prevalence has largely been ignored, yet income segregation can serve as an indicator for residential segregation among class lines. Returning to the role that social context plays in the popularity of marriage within a geographic area, income segregation may have a also have a varied impact on a population's exposure to marriage as a normative family structure. Income has been established in previous literature as a barrier to the

transition to marriage for low income and working class populations (Smock & Manning 2005; Edin & Reed 2005).

**Research Questions and Hypotheses**

Based on the current literature linking contextual characteristics to marital outcomes, this chapter will address the links between metropolitan characteristics and marriage prevalence. The primary question that this chapter seeks to answer is: what are the metropolitan social characteristics associated with marriage prevalence? In other words, what role does social structures play in marriage prevalence?

As noted in previous chapters, there is a large literature devoted to the study of marriage patterns. At the individual level, the probability of marriage is closely related to race/ethnicity, education and economic status. At the macro level, marriage prevalence should vary according to the racial, ethnic and socioeconomic composition of underlying populations. Although these factors are clearly associated with marriage prevalence, there has been insufficient attention to the role of socioeconomic conditions as mediators between the large racial/ethnic variations in marriage throughout the United States. Further, few studies have explored the extent to which these associations have remained stable over time. This study addresses these issues by employing OLS regression to the study of marriage prevalence across metropolitan areas. These analyses consider the importance of each set of structural factors: race/ethnicity, educational attainment, and economic characteristics. The ordering of the analytical models is designed to help test the following set of hypotheses:

H1 There will be significant variation in marriage prevalence depending on the racial/ethnic composition of metropolitan areas:

H1a There will be a positive relationship between the proportion Non-Hispanic white and marriage prevalence across metropolitan areas.

H1b There will be a negative relationship between the proportion Non-Hispanic black and marriage prevalence across metropolitan areas.

H1c There will be a positive relationship between the proportion Hispanic and marriage prevalence across metropolitan areas.

H1d There will be a positive relationship between the proportion Asian and marriage prevalence across metropolitan areas.

H2: Educational composition of the metropolitan areas will mediate the relationship between racial/ethnic composition and marriage prevalence across metropolitan areas.

H2a: Based on the previous literature, it is expected that there will be a negative relationship between the proportion of the metropolitan area with a high school degree or less and metropolitan marriage prevalence

H2b: It is expected that there will be a positive relationship between the proportion of the metropolitan area with a college degree and metropolitan marriage prevalence.

H3: Metropolitan economic characteristics (dominant employment sectors and income segregation) will also mediate the relationship between the racial/ethnic composition and marriage prevalence across metropolitan areas.

H4: The importance of the racial/ethnic composition of metropolitan areas will decline over the period between 1990 and 2010.

**Data and Variables**. The data for this chapter come from the aggregated US2010 Project Longitudinal Tract Database (the LTDB; explained in detail in Chapter 3), for the years 1990, 2000, and 2010.

*Dependent variable.* The dependent variable for this set of analyses is metropolitan area marriage prevalence, a continuous measure represented by the currently married population within a metropolitan area divided by the total population in the metropolitan area. The measure is explained in greater detail in Chapter 3.

*Independent variables.* The focal independent variables are the racial/ethnic indicators. These indicators are continuous measures representing the proportion of the metropolitan population that are Non-Hispanic White, Non-Hispanic Black, Hispanic and Asian.

*Other independent variables.* The education composition of the metropolitan area is measured with a single indicator representing the proportion of the adult population (age 25 and older) with a high school education or less.

The set of economic variables consists of two types. The first set is variables that describe the employment characteristics of the metropolitan area by employment sector (proportion of the employed population that work in professional, manufacturing or self-employment sectors). Second, these analyses also include an economic measure, represented as the proportion of the metropolitan area that lives in poor census-tracts. A detailed explanation of all of the variables used in the study is available in Chapter 3.

*Control variable.* Each of the models include a control for the population of the metropolitan area as an attempt to reduce any biased estimates related to the variable size of the metropolitan areas in this study.

**Results**

Table 4.1 presents the descriptive results for the data used in the analyses predicting metropolitan marriage prevalence for 1990, 2000 and 2010. As expected, the mean metropolitan marriage prevalence has declined by approximately 3.71 percentage points in the period between 1990 and 2010, though there was little change in the interim period between 1990 and 2000.

The results show expected trends in racial/ethnic composition, with the average Non-Hispanic White percentage of metropolitan areas declining approximately 8 percentage points between 1990 and 2000. The Non-Hispanic Black population remains static (11 percent) and the Asian population slightly increases by approximately 1 percentage point. The Hispanic population shows the sharpest increase growing from 7.25 percent in 1990 to nearly 14 percent in 2010.

The percentage of the population (age 25 years and older) that has a high school diploma or less has declined during the period of study, coinciding with the increase in college attendance across the United States during the same period (National Center for Education Statistics, 2015). Educational attainment beyond high school is associated with higher levels of marital stability, though age at first marriage is usually higher for those with post-high school education versus those who attained a high school education or less (Cherlin 2009). For many who attend college, marriage is delayed until the completion of education and gainful employment has been established (Cherlin 2009; Torr 2011).

The results for the economic indicators show that there has been a steady decline of employment in the manufacturing sector and a steady increase of employment in the professional sector (from 11.89 percent in 1990 to 15.43 percent in 2010). The self-employed percentage remained stable while in contrast the percentage unemployed

appears rather unstable, peaking at 14.59 percent in 2000 and declining to 3.87 percent in 2010. Finally, income segregation, the percentage of the metropolitan population residing in poor census tracts, has increased since 1990 from just over 9 percent to over 13 percent in 2009. This could be a result of the housing crises that occurred in the latter years of the 2000s as there was an increase in foreclosures and a higher demand for families to reside in rental properties in its wake (Towe & Lowley 2013). This form of displacement may have led to an increase in household income variability and residential instability within neighborhoods (Pandit 2011) and a dampening impact on marriage prevalence for metropolitan areas that experienced the highest impacts.

**Multivariate Results.** Table 4.2 presents the results of the multivariate regression analyses predicting marriage prevalence for 190 metropolitan areas. Model 1 is the baseline model, showing the relationship between race/ethnicity and marriage prevalence for 1990, 2000, and 2010 controlling for population size. In 1990, for each unit increase in the proportion of the metropolitan population comprised of Non-Hispanic Whites marriage prevalence is estimated to increase marriage prevalence by nearly .073 percentage points. For the non-Hispanic Black population, there is a negative association to marriage prevalence: increases in the Non-Hispanic Black population are associated with a decline in marriage prevalence of approximately .17 percentage points. In 2000 the relationship between proportion Non-Hispanic White and marriage prevalence is stronger with an approximately .23 percentage point increase associated with this population share. The significance of the Non-Hispanic Black population share is also strengthened, albeit in the opposite direction compared to Non-Hispanic Whites. In other words, by 2000 there is a stronger negative relationship compared to 1990. In both 1990 and 2000, there is no significant association between marriage prevalence and the proportion of the metropolitan areas that are Hispanic or Asian. The relationship

between any racial/ethnic population proportion and marriage prevalence is absent by 2010. The absence in 2010 confirms Hypothesis 4 that the relationship between metropolitan race/ethnicity and marriage prevalence has declined over time.

Model 2 adds educational composition to the model predicting marriage prevalence. Recall that the measures for metropolitan level educational attainment is represented as the proportion of the population age 25 and older with a high school diploma or less and the proportion of the population age 25 and older with at least a college degree. In 1990, educational attainment is not a significant factor in predicting marriage prevalence, nor does it change the direction or significance of the Non-Hispanic White or Non-Hispanic Black relationship to marriage prevalence. In 2000, educational attainment is significant. Each unit increase in the proportion of the metropolitan area having a high school diploma or less is associated with a .175 percentage point increase in marriage prevalence. There is also a positive relationship between the relative size of the college educated population and marriage prevalence. However, the inclusion of education erases the significance of the White proportion in the metropolitan area. Educational attainment is also significant in 2010 with each unit increase in the proportion of individuals with a high school diploma or less associated with an increase in marriage prevalence of approximately .15 percentage points. In 2010, the relationship between the college-educated proportion and marriage prevalence changes direction: proportion of college educated population is associated with a .43 percentage point reduction in marriage prevalence. Like the results in 2000, the racial/ethnic composition has no significant impact on marriage prevalence once education is taken into account.

Model 3 presents the results examining the relationship between metropolitan racial/ethnic composition and marriage prevalence with the addition of economic

indicators, including the composition of employment sectors and income segregation measure by the proportion of the metropolitan population living in a poor census tract. The addition of these measures has no significant impact on the relationship between race/ethnicity and marriage prevalence in 1990.

In 2000, the addition of economic variables increases the magnitude of the association between the size of the Non-Hispanic White population and marriage prevalence. The Non-Hispanic White population size has a greater impact when economic factors are added to the model in comparison to the baseline model. Interestingly, with the addition of the economic indicators, the Asian and Hispanic proportions of metropolitan areas become significant factors in 2000. However, the Non-Hispanic Black proportion is not a significant factor once economic controls are added to the model. This suggests that the negative association between the proportion of metropolitan areas that are Black and marriage prevalence is better explained by the composition of the employment sector and the related relationship of local ecology vis à vis income segregation.

The 2000 results suggest that economic factors play an important role, with the proportion of metropolitan areas employed in self-employment and manufacturing jobs having a positive association with marriage prevalence. The proportion employed in professional jobs in metropolitan areas has the opposite effect: for every unit increase in the proportion of the population in professional jobs, marriage prevalence decreases by 0.625 percentage points. However, the racial/ethnic composition maintains a similar pattern to 1990 with the proportion of each group significantly associated with an increase in marriage prevalence, with the exception of Non-Hispanic Blacks.

The racial/ethnic composition is no longer significant in the 2010 results while all of the economic indicators are important. Notably, the proportion professionally

employed and income segregation show a negative relationship with metropolitan marriage prevalence. These results suggest that the racial/ethnic composition is not as important of a factor as economic indicators in recent years. This finding is consistent with the convergence of racial/ethnic marriage patterns at the population level, and the emergence of socioeconomic indicators as increasingly important (Wilson 1978; Reed & Edin 2005; Smock & Manning, 2005).

Model 4 is the full model including all covariates. In 1990, racial/ethnic composition, specifically Non-Hispanic White and Non-Hispanic Black proportions of the population are the only significant compositional variables. Taking all economic and educational variables into account, for each unit increase in the metropolitan Non-Hispanic White population, marriage prevalence increases by approximately .075 percentage points. Each unit increase in the Non-Hispanic Black population decreases marriage prevalence by .173 percent.

The results for 2000 are quite different. Here, in the full model, the Non-Hispanic White population is a significant factor associated with metropolitan marriage prevalence, while the significance of the Non-Hispanic Black population disappears. In other words, there is greater marriage prevalence in metropolitan areas with proportionately larger White populations in 2000, and this association is apparent even after adjusting for a range of structural conditions across metropolitan areas. In the 2010 full model results, the relative size of racial/ethnic populations of the metropolitan area are not important, but rather education and certain economic indicators matter. Put differently, the role of metropolitan racial/ethnic composition in marriage prevalence diminishes over the period of study.

**Discussion**

Incorporating structural theory, one of the central foci of this chapter is to determine the role of race and ethnic composition on marriage prevalence across broad geographic areas. The analyses support structural theory whereby marriage is generally more prevalent when economic conditions are strong (Blau 1977; Wilson 1996; Qian & Lichter 2011). Model 1 partially confirms Hypothesis H1 which predicts metropolitan racial/ethnic composition would be significant and that specifically, the relationship between marriage prevalence and racial/ethnic composition would be positive for Non-Hispanic White, Asian and Hispanic compositional indicators and negative for the Non-Hispanic Black composition indicator. The proportion of the population that is Non-Hispanic White was important in 1990 and 2000, but was not a significant predictor of marriage prevalence in 2010. For Blacks it was a negative relationship in 1990 and not significant in 2000 and 2010. That the racial/ethnic composition declined in its importance regarding marriage prevalence during this period is not surprising given that national trends during this period show an increase in age at first marriage and an increase in the proportion of the population that has never married, for all groups (Elliot et al. 2012; Payne 2014). From a population perspective, metropolitan marriage prevalence would become less sensitive to the presence of individual racial/ethnic groups given that the decline in the currently married population is something that has been experienced across the U.S. adult population in general.

Hypothesis 2 is partially confirmed. The findings suggest that educational composition does in fact serve as a mediator in the relationship between racial/ethnic composition and marriage prevalence across metropolitan areas, though not in the expected direction. Based on the past literature, it would seem that an increase in the metropolitan proportion of the population that had a high school diploma or less would

have a negative relationship with marriage prevalence, especially when considering the relationship between that higher education and higher income. Thus, individuals generally would be better poised to actively search for partners and transition the relationship to formal marriage with higher levels of educational attainment (Torr, 2011; Greenwood et al. 2012). The results, however, fail to confirm this hypothesis suggesting that relatively lower levels of education are actually associated with higher marriage prevalence, and it is only in 1990 that the Non-Hispanic White or Black composition of the population is important once educational attainment is taken into account. One plausible explanation supported by the extant literature is that individuals often delay marriage precisely because they prefer to wait until their education is complete (Uecker & Stokes 2008). For the population that has attained a high school diploma or less, marriage would theoretically occur earlier since school completion occurs earlier. Therefore, as the proportion of the metropolitan area that has a high school diploma or less rises, the proportion currently married increases. Based on the results, in 2000 and 2010 this characteristic is more important than the racial/ethnic composition of the metropolitan area. The proportion of the population with a college degree or higher has the opposite relationship to marriage prevalence across metropolitan areas: a college degree or higher is associated with dampened marriage prevalence.

It could be that the composition of metropolitan areas shifted during this period as more of the college-educated become concentrated in certain metropolitan areas (Ryan & Siebens 2012). It could also mean that the median age of the college educated population has increased during the 10 year period along with the rise in educational attainment, and this may have an impact on the direction of the relationship between higher educational attainment and lower marriage prevalence. Since this study is cross-sectional and does not account for the timing of events, there is not enough information

to determine which mechanism accounts for the negative association by 2010. This finding is inconsistent with the previous research on its surface, though the interpretation should be held with caution since there is no definitive information regarding the age structure of the metropolitan areas in this study.

Hypothesis 3 predicted metropolitan economic characteristics will serve as mediators in the relationship between racial/ethnic composition and marriage prevalence across metropolitan areas. Hypothesis 3 is partially confirmed: the addition of economic and employment variables do not affect the direction of the relationship that White and Black population compositions in the metropolitan area has to marriage prevalence in comparison to the baseline model in 1990. Interestingly, the proportion Asian and Hispanic in the metropolitan areas are significant in 2000 while these proportions do not demonstrate any importance to marriage prevalence in any other model. For instance, this is not the case in 2010, where the racial/ethnic composition is not a significant factor for metropolitan marriage prevalence, net of the economic and employment measures. The proportion of the 16 and older population that were professional employees (i.e. management, professional or related occupations) and the proportion residing in poor census tracts were each associated with a decrease in marriage prevalence. Higher levels of income segregation suggest that access to opportunity structures is not equitable. More income isolation also suggests areas of concentrated poverty, and perhaps, more areas where transitions to marriage are more difficult to make.

Professional employment often requires higher levels of education (a proxy for higher salary), thus making this segment of the population more attractive on the marriage market and presumably more financially stable for marriage. A possible explanation for the negative relationship between the presence of professional

employment and marriage prevalence may be that the positive attributes associated with professional employment may indeed present more marriage prospects for this particular population, thus prolonging the search period for this population.

Metropolitan areas with a high number of professional employees relative to the metropolitan population may contain a higher number of singles, opting for career advancement or marriage delay rather than forming families. Furthermore, such metropolitan areas may be more transient (i.e. larger central cities), and perhaps married couples are less likely to reside in these areas. While there is ample evidence to support this explanation (Wang, 2014), there is not any information available in this study that accounts for differences in metropolitan age structure. Similar to the findings that predicted the relationship between educational attainment and marriage prevalence; these interpretations are held with caution. Without knowing the age structure it is difficult to determine if it is indeed a largely young professional population that is driving the negative relationship between professional employee proportion and metropolitan marriage prevalence. If this is the case, it could be the metropolitan areas with higher proportions of young professionals may have a culture that prioritizes professional achievement or the security of one's career before seeking a status such as marriage. Marital obligations may be in conflict with the time commitment of improving one's professional status, and without knowledge of the age structure, it is difficult to ascertain the mechanism that is driving this negative relationship. Another factor is that many young adults are opting for cohabitation, a possibility that cannot be accounted for in the present study.

**Conclusion**

The findings of Study 1 are relatively consistent with the previous literature that concludes that race/ethnicity is a decreasingly important characteristic explaining the

overall decline in marriage prevalence among young adults, although the significance of the Non-Hispanic Black share of metropolitan areas  was an enduring factor in 1990. In the latter years, race/ethnicity was a negligible factor, but metropolitan characteristics such as metropolitan educational attainment, employment, and type of employment are better indicators as they have a strong association with marriage prevalence, even after controlling for factors that have had a strong relationship with marriage across the literature (Uecker & Stokes 2008; Cherlin 2009; Wang 2014). The next chapter will empirically examine the relationship between individuals within varying metropolitan contexts, in an effort to test how social structure impacts individual marital status among young adults.

# CHAPTER 5

## STUDY 2: CHARACTERISTICS PREDICTING NEVER MARRIED

The preceding chapter examined the relationship between several metropolitan characteristics and marriage prevalence. In an effort to better understand the varying relationship between individuals and the larger social context in which mate selection is likely to occur, this chapter turns the focus to the relationship between metropolitan-level characteristics and the log-odds (hereafter, odds) that individuals have never married. I extend the work of previous research that examines how social contexts can shape individual behaviors including union formation, and specifically marital status (Crowder & Tolnay 2000; South & Crowder 2000; Teachman and Crowder 2002; Cherlin 2004; Yabiku 2006). Like other literature in the area of research that joins marriage market characteristics and marital outcomes, this chapter will examine how a larger geographic area, census-designated metropolitan statistical areas (MSAs), may play a role in the differences in the marital status of the young adults that reside within. The analyses consider the role of three factors in predicting variations in marriage: sex-ratios as a proxy for the pool of available partners, region as a measure of the racial/ethnic distribution of the young adult population across the country and income segregation as a measure of available partners who might be considered "marriageable". Throughout the analyses, I keep a focus on the persistence of racial and ethnic differences in the odds of having never married as a young adult in the United States.

Considering metropolitan context, I estimate each of the models for 1990, 2000, and 2006-2010 to compare how the relationship between context and marriage has changed over time throughout the United States for the four largest racial/ethnic groups. The selected time points are significant because they capture the most recent shifts in the

economy and changes both in the population distribution and the formation of formal unions over a 20 year period (Copen et al. 2012). In other words, the three time points capture significant racial/ethnic demographic dynamics in tandem with larger societal shifts in economic opportunities and family formation norms. The period between 1990 and 2000 saw significant changes in economic stability capturing the possible influences of the economic downturn of the late 1980s and early 1990s. The period between 2000 and 2010 saw its own dramatic shifts from the relative prosperity of the early 2000s to the Great Recession of the latter part of the 2000s (Seccombe 2000; Bitler et al. 2004; Cherline, Morgan, Cumberworth & Wimer 2013). Also associated with these economic changes, metropolitan areas in the United States saw dramatic shifts in the population growth of some areas and decline in others. These divergent growth patterns are inevitably associated with changes in the relative size of racial and ethnic group across these metropolitan areas (Logan, Xu & Stults 2012; Frey 2011).

Demographic changes may be associated with changes in union formation in several ways. But one fundamental demographic component of marriage outcomes is the available pool of eligible mates (Qian & Preston 1993; Wilson 1987; Cherlin 2004). Age-specific and race-specific sex ratios can serve as indicators of the marriage market conditions for single adults in a given geographic area (Warner, et al. 2011; South & Lloyd 1992). Although demographic characteristics such as age and sex composition are often taken into account when investigating family dynamics, the role of race is often studied separately. This chapter takes a different approach by incorporating the role of race- and age-specific sex ratios specifically as predictors of marital status among young adults.

Previous research on the marriage squeeze and population composition have emphasized the importance of sex ratios in the transition to marriage and thus, have

found that an excess in females often reduces the likelihood that women are currently married (Warner et al. 2011; South & Lloyd 1992), though the same impact has not been noted for an excess of males within a given marriage market (Guilmoto 2012). The evidence suggests that the impact of imbalanced sex ratios, particularly one in which men are in shorter supply, is especially important in understanding marriage among younger adult populations. Theoretically men have additional time to continue a mate search with a variety of potential partners and where women have fewer potential partners from which to choose (South & Lloyd 1992; Oppenheimer, Kalmijin, & Lim 1997; Guilmoto 2012). It is possible, however, that the importance of sex-ratios may change over time as unions become more homogenous in age and education reflecting women's increased status and participation in the labor market.

Although sex ratios are an acknowledged factor in marriage patterns overall, few studies have concerned whether racial and ethnic patterns of marriage are responsive to within-race sex ratios. This is important as some groups experience a greater dearth of potential partners due to differential migration patterns, incarceration or mortality that may all be quite variable within groups. Therefore, in addition to testing the main effect of sex ratios for the probability of marriage among the young adult population within metropolitan areas, I also test interactions with race/ethnicity to determine whether sex ratios at the metropolitan level have a differential effect across individuals from each racial/ethnic group.

Aside from the metropolitan racial and ethnic sex distributions that may play a role in marital status, this chapter also examines the importance of region in explaining differential patterns of marriage by race and ethnicity. As described in detail in the literature review (Chapter 2), regional variation in marriage patterns have been documented in the previous literature. For example Mather & Lavery (2010) found the

Northeastern and Western (particularly the Southwestern) regions to be associated with lower levels of currently married young adults. Regional differences are thought to be driven by a range of factors including social norms, mate availability, and educational differences suggesting that the relative wage gap among high school educated young adults may also play a role (Gould & Paserman 2003; Mather & Lavery 2010). Other research suggests the opposite. For instance, the Northeastern region of the United States typically has a markedly later age at first marriage as many young people in this region have attained higher levels of education, and may seek to achieve certain career milestones before finding a partner (Ryan & Siebens 2012). Regardless of the mechanisms, the marriage rate in the Northeast was just 16.0 per 1,000 in 2009, in comparison to the national average of 19.1 per 1000 (Elliot & Simmons 2011).

Region may also serve as a proxy for racial and ethnic distribution as levels of racial and ethnic segregation vary by both region and by period. Recent internal migration patterns have resulted in the growth of many metropolitan areas in both the South and the West and along with this growth are lower levels of racial and ethnic segregation (Scommenga 2011). Conversely, the constriction of employment opportunities in manufacturing sectors in metropolitan areas in the Midwest and the Northeast has intensified the deeply entrenched racial and ethnic residential segregation patterns that have been part of the historical fabric for the majority of older metropolitan areas (Massey & Denton 1993; Frey 2011). These analyses will go a step further than estimating the relationship between sex ratios and marital status by testing the way that region is associated with differences in the odds of having never married for young adults residing in metropolitan areas. In addition to the main effects of region and race/ethnicity, these analyses also test the interaction between race/ethnicity and region

to estimate how region may be differentially associated with marriage across racial and ethnic groups provided the variation in distribution.

Finally, this chapter addresses the importance of metropolitan income segregation (measured as proportion of the metropolitan population residing in a poor census tract) for predicting the odds that young adults have never married. Census tracts are often used as proxies for neighborhoods and neighborhood poverty has been an important predictor of marital outcomes (Sampson, Morenoff & Gannon-Rowley 2002; South & Crowder 1999; Scharfenberg 2016) and the current analyses test this relationship at the metropolitan level. This measure captures the concentration of poverty at the metropolitan area by calculating the how residentially segregated poor families are from the remainder of the metropolitan population. Concentrations of poverty could be linked to concentrations of young people that have not married due to economic constraints or financial insecurity, factors that have been documented as barriers to marriage for some (Edin 2000; Manning & Smock 2005). Interaction terms will also test how this poverty measure affects each racial and ethnic group's marital status differently, especially since the impact of poverty has been well-documented as having a differential and less salient impact on whites versus populations of color (Massey & Denton 1993; Patillo-McCoy 1999; Conley 1999).

**Research Questions and Hypotheses**

What are the racial/ethnic differences in the likelihood of having never married? The first set of hypotheses is based on the expectation of significant variation by race/ethnicity in the probability of having never married across all years in this study. This variation is expected net of metropolitan controls. In particular:

H1a: Hispanics will have lower odds of having never married compared to Non-Hispanic Whites.

H1b Non-Hispanic Blacks will have higher odds of having never married compared to Non-Hispanic Whites.

H1c: There will be no significant difference between the odds of having never married for Asians in comparison to Non-Hispanic Whites.

H1d: This pattern is expected to be observed in 1990, 2000, and 2010, though the magnitude is expected to decrease along with the convergence in marriage rates during this period in the extant literature (see Elliot et al. 2012).

How does social structure, as measured by region of residence, metropolitan age and race- specific sex ratios and income segregation impact the likelihood that young adults have never married? The second set of hypotheses focuses on the importance of specific structural characteristics for understanding marriage patterns, particularly region, sex ratios, and income segregation.

H2a: Region will be significantly associated with the odds of having never married. Individuals living in the Northeast, Midwest, and West regions will have higher odds of having never married when compared to individuals living in the South.

H2b: For non-Hispanic Blacks, Asians, and Hispanics, region will be a significant moderator since minority population compositions vary greatly across metropolitan areas and consequently regions.

H3a: Due to the variations in group concentrations across metropolitan areas in comparison to Non-Hispanic whites, age and race specific sex ratios will be significantly associated with the odds of having never married for Asians, Hispanics, and Blacks so that a sex ratio that favors men (more women than men or less than 100 men per 100 women) will positively associated with having never been married.

H3b: The proportion of the metropolitan population living in poor census tracts (income segregation) will be positively associated with the odds of having never married.

A higher proportion of the metropolitan population living in poor census tracts will be associated with higher odds of being never married.

H4a: The age and sex specific sex ratios will significantly moderate the relationship between Non-Hispanic Blacks and the odds of having never married compared to Non-Hispanic Whites. This relationship will not be significantly different for Asian and Hispanic young adults.

H4b: Income segregation will moderate the relationship between race/ethnicity and the odds of having married for Hispanics and Non-Hispanic Blacks compared to Whites. For Hispanics and Non-Hispanic Blacks, the odds of having never married will be moderated by the proportion of the metropolitan areas residing in poor census tracts.

**Data and Variables.** Study 2 data are from the aggregated US2010 Project Longitudinal Tract Database (the LTDB), aggregated data from the Summary File 3 (SF3) U.S. Census population tables, and individual level microdata from the Integrated Public-Use Microdata files (IPUMS). The LTDB and IPUMS data include information from 1990, 2000, and 2010. Summary File 3 provides information for 2000 and 2010. Each data source is explained in greater detail in Chapter 3: Data and Methods.

*Dependent variable.* The dependent variable for these analyses is a dichotomous indicator where 1= never-married and 0= ever-married. This variable is derived from the original individual marital status categories status variables detailed in Chapter 3 in order to estimate a logistic regression model and has been used in similar studies predicting dichotomous marriage outcomes (see Qian 1999). All individuals who have never married are coded as such in the analyses while individuals in that are currently married, widowed, divorced or separated are coded as ever married. Dichotomous indicators via logistic regression have been used in previous work in the prediction of

marriage probabilities and outcomes (Crowder & Tolnay 2000; Halliday-Hardie & Lucas 2010).

*Individual-level independent variables.* The four major racial/ethnic groups that have been the focus of the dissertation are included as the primary independent variables in this chapter. For these analyses race/ethnicity is coded into four categories including: Non-Hispanic white, Non-Hispanic black, Non-Hispanic Asian, and Hispanic (any race). Other racial categories are excluded from this study, as discussed in detail in Chapter 3.

Region represents the geographical region in which individuals in this sample reside. Region is coded into the four census-designated categories: Northeast, Midwest, South and West.

Age and race-specific sex variables represent the metropolitan proportion of men to women ages 20-34 for each of the four racial/ethnic groups included in the study. Sex ratios are coded so that race-specific sex ratio is applied to respondents belonging to the respective group. For instance, for Asian respondents the sex ratio will reflect the age and race specific ratio for Asians in the metropolitan of which the respondent resides. *Income segregation:* Income segregation represents the proportion of the metropolitan population residing in poor census tracts. This variable uses data from the preceding year as an indicator for the following year (i.e. income segregation in 1999 in lieu of 2000).

*Control variables*. In order to measure the association between the independent variables and the binary dependent variable of having never married (versus ever-married), this study controls for a number of variables that previous studies have found to be important in marriage outcomes, including many of the metropolitan covariates from the previous chapter. This study includes control measures for the total population of the metropolitan area, metropolitan marriage prevalence (proportion metropolitan

area currently married), the proportions of the employed population working in the manufacturing, self-employed and professional sectors, the proportion of population that are high school graduates or less, and the proportion of the metropolitan area that have earned a bachelor's degree or higher (educational attainment). Additional measures control for individual characteristics that have been previously linked to marital status. These measures include sex (male as the reference category), nativity (foreign born is the reference category), dummy variables representing educational attainment (high school graduate as the reference category), and age dummy variables (with ages 20-24 as the reference category). The preceding variables are explained in greater detail in Chapter 3..

**Results**

Table 5.1 presents the means for the analytical sample for this chapter. The metropolitan-level means are described in detail in Chapter 4. The individual-level sample is comprised of the Non-Hispanic White, Black, Asian, and Hispanic populations between the ages of 20-34 during the years 1990, 2000, and 2006-2010 (also referred to as 2010). For the multivariate analysis the samples are weighted to account for the sampling design in the 5 percent sample data provided in the IPUMS (Ruggles et al. 2010). For the purposes of presenting the analytic sample means, weights are not included. The racial and ethnic distribution of the analytic sample is similar to the general pattern of the general U.S. population, with non-Hispanic whites comprising the largest share of the sample for each year (70.4 percent in 1990, 60.5 percent in 2000 and 60.2 percent in 2010). Hispanics are the second largest group and also the fastest growing group across the years used in this analysis growing 7.6 percentage points in the period between 1990 and 2010. Non-Hispanic Blacks and Asians comprise the smallest proportions of the sample across all three years.

The regional distribution of the sample is of interest here, as it reflects the changes and shifts that have occurred in the population distribution in the United States since 1990. In 1990, the largest share of the 20-34 age group lived in the South (31.3 percent) followed by the West, Midwest and Northeast. However by 2010, there was a 3 percentage point decrease in the young adult population in the Northeast. Meanwhile the South saw the most growth increasing by 3.9 percentage points between 1990 and 2010. These changes may reflect migration patterns of these groups or, considering the cross-sectional nature of census data, the patterns may reflect differences in the age composition (i.e. regional age structure based on past fertility and mortality) with smaller cohorts of the 20 to34 age groups over time. However, the observed pattern in the sample is consistent with internal migration patterns for the total population throughout this period. In particular, there was notable out-migration from the Northeast and Midwest and significant population growth in the West and South (see Table 2.4).

Besides shifts in overall population distribution, there has been considerable change in the distribution of racial and ethnic groups across U.S. regions. Table 5.2 displays each region by its racial-ethnic composition. Reflecting the overall increasing diversity of the U.S. population, all regions saw a reduction in the share of population composed of Non-Hispanic Whites between 1990 and 2010 with the South experiencing the sharpest decrease of 10.9 percentage points. The Northeast saw a slight increase (less than 1 percentage point) of its Black population during the same period. All regions experienced an increase in the Hispanic population. This growth is likely due to the influx of young adult immigrants from Latin America during this same period ( Greico et al. 2012). Similarly, the Asian population comprised a higher share of immigrants than both the White or Black populations, and experienced growth in all regions during this

period. The sharpest increase is in the Northeast with an increase of 4.7 percentage points.

The second set of hypotheses for this chapter focuses on sex ratios as important predictors of marriage. Table 5.3 presents the metropolitan-level age-specific sex ratios by race for the years 2000 and 2010. In 2000, Hispanic and Blacks were exposed to the most skewed sex ratios across the 190 metropolitan areas used in this study, with the Black population containing approximately 88 males per 100 females and the Hispanic population containing approximately 117 males per 100 females during the same period. The imbalance among Hispanics likely reflects immigration patterns of young men to the United States whereas the imbalance among Blacks may well reflect differences in mortality and incarceration patterns that reduce the availability of young Black men in the non-institutionalized population. The White and Asian sex ratios in 2000 are much closer to parity. In 2010 the Black and White population saw little change in the number of males per 100 females while the Hispanic population saw a drop in the number of males with 109 males per 100 females. According to the data presented here, the Asian population dropped to just 74 males per 100 females, a substantial drop from the ratio in 2000. Finally, Table 5.4 displays income segregation as measured by the proportion of the metropolitan population living in poor census tracts. The Asian and Hispanic populations were most likely to live in metropolitan areas with relatively high levels of income segregation compared to Non-Hispanic Whites or Non-Hispanic Blacks.

As noted in Chapter 3, there have been some noted challenges with earlier iterations of the American Community Survey, including challenges with estimates related to special populations such as Asian/Asian Americans (Islam et al. 2010). Islam and colleagues (2010) noted that historically, the data collection process must overcome linguistic barriers and biased response rates with the Asian population, and these issues

along with its smaller population size are seemingly impacting the calculation of the Asian age-specific sex ratio for 2010. Reliability issues with the ACS have also been noted elsewhere (see Spielman & Folch 2014 ). Because of the noted issues with ACS estimates, the bulk of the analyses for Chapter 5 focuses on 2000 only.

The final set of hypotheses for this chapter focuses on the impact of income segregation as a factor in predicting individual level marriage patterns. There are notable differences in the racial-ethnic distribution of the young adult population living in poor census tracts. Table 5.3 displays the percentage of each racial-ethnic group living in poor census tracts between 1990 and 2009. Taking into account the economic downturn that occurred in the United States during the latter part of the first decade of the 2000s, it not surprising that each group experienced an increase of its share living in poor census tracts between 1990 and 2009. In fact, the increase was minimal during the period between 1990- and 2000,, with the sharpest increase (.9 percent) for the Asian population. In contrast, the period between 2000 and 2009 saw increases between 3.3 and 4.1 percentage points, with the highest increases occurring for the Black and Hispanic populations. This reflects persistent racial/ethnic disparities and vulnerabilities for these groups in particular (Massey & Denton 1993; Patillo-McCoy 1999). Because of the data issues noted in the previous section, the multivariate analysis will focus on 2000.

**Multivariate results.** Table 5.5 presents the results for the logistic regression model predicting the odds of having never married versus ever having married for the White, Black, Asian and Hispanic young adults for the years 1990, 2000, and 2010 controlling for metropolitan population size. Each model is adjusted for the clustering of respondents at the metropolitan level. The results show that in 1990, Blacks were just over two times more likely to have never married when compared to Whites, while

Asians were nearly 14 percent more likely to have never married, though marginally so. Hispanics in 1990 were almost 11 percent less likely to have never married when compared to Whites.

By 2000, these dynamics had shifted slightly with a small reduction in the odds that Blacks had never married compared to Whites, and the Asian odds of having never married still marginally higher than Whites. The magnitude of the Hispanic odds of never marrying versus Whites broadened such that by 2000 Hispanics were about 20 percent less likely to remain never married when compared to Whites. The shift for the Hispanics may reflect patterns of immigration with a larger proportion of Hispanic young adults coming from the first or second generation in 2000 than in 1990. Second generation Hispanics may make similar family formation choices as their third generation or higher counterparts (Oropesa & Landale 2004; Choi & Seltzer 2009). Models using the 2010 ACS data reveal a more dynamic change. For Black young adults, the odds compared to Whites were close to the 1990 levels with Blacks over two times more likely to be never married than Whites. By 2010, both Hispanics and Asians are less likely to have never married when compared to Whites, though the Asian effect is again marginally significant.

Table 5.5. Model 2 presents the results when individual-level control variables are added to the analyses. Once individual-level characteristics are controlled for, Blacks were nearly 2.5 times more likely to have never married than Whites, and Asians were just over 40 percent more likely to have never married in 1990. Hispanics were not significantly different from Whites.

Turning to the results for 2000, the effect for Blacks is only slightly reduced in comparison to Whites, while the Asian odds slightly increased to nearly 50 percent higher odds compared to Whites. Like 1990, the Hispanic odds of having never married

are not significantly different from the Whites in 2000. By 2010, Blacks are nearly 2.5 times more likely to have never married than Whites, demonstrating a consistent pattern when compared to White young adults. In 2010 Asians are 40 percent more likely to have never married than Whites.

Model 3 controls for both individual and metropolitan level characteristics. The effects for Blacks and Asians are virtually unchanged when compared to the results for Model 2 in 1990. For Hispanics, controlling for metropolitan characteristics has a significant impact, resulting in slightly higher odds (8 percent) of never marrying compared to Whites. In 2000, the relationship between the odds of having never married for Blacks (113 percent higher) and Asians (43 percent higher) are very similar to the results from Model 2, underscoring the strength of each groups' odds of marriage relative to Whites holding variety of relevant factors constant.

In 2010, Blacks, Hispanics, and Asian each have higher probabilities of having never married when compared to Whites after the inclusion of the metropolitan area characteristics. Blacks remain over 2.5 times more likely to have never married. Hispanics have a 14 percent higher odds and Asian have a 44 percent higher odds of being in the never married when compared to Whites once I control for the types of cities in which these young adults reside.

The models in Table 5.5 offer a snapshot of the centrality of race/ethnicity as a key factor in predicting marital outcomes for young adults across a twenty year period. Despite the change over time, and model specification, there were little changes in the coefficients (odds-ratios) for the racial/ethnic groups and the overall patterns remained constant, if there were small changes in magnitude. Since it has been established that, even after taking into account a number of individual-level and metropolitan-level characteristics, racial/ethnic differences are evident in predicting the never married

population, the remainder of this chapter will center on 2000, the year in which full, reliable data are available for each independent variable of interest.

Table 5.6 presents the results for the logistic regression models predicting the odds of never having married based on the census region where individuals reside, for the year 2000. Model 1 of Table 5.6 replicates the full model (Model 3) from Table 5.5 but now includes variables for region. Each of the regions included in the model, Northeast, Midwest and West are each associated with a higher odds of having never married in comparison to the South. Young adults in the Midwest and the West have between 24 percent to 27 percent higher odds of having never married compared to those living in the South. Residence in the Northeast has a substantial association with the odds of never having married, ranging from 30 percent to 50 percent higher than for those living in the South.

Racial and ethnic differences in the odds of being never married persist in Model 1 despite controlling for regional variation. However, recall that it was hypothesized that there may be regional differences in the odds of remaining never married for different groups. Therefore, Model 2 in Table 5.6 includes interaction terms that measure the effect of region by race/ethnicity. In comparison to Whites residing in the South, Asians in the Northeast have the lowest odds of having never married followed by Non-Hispanic Blacks in the Northeast. Asians in the Midwest are also less likely to have never married compared to Non-Hispanic whites in the South. The only group with higher odds of having never married compared to the reference group is Non-Hispanic blacks in the Midwest. Each of the remaining racial/ethnic categories is significantly less likely to have never married than whites in the South except for Asians in the West and Hispanics in both the Midwest and West regions. Overall, regional variation in the odds of being never married vary by race/ethnic group so that being non-White outside the South is

associated with slightly lower odds of being never married when compared to Whites with the exception of Blacks in the Midwest.

The next hypothesized difference in the probability of remaining never married focuses on the sex ratios of young adults in the metropolitan area. To address these hypotheses, Table 5.7 Model 1 presents the results for the second set of hypotheses predicting the relationship between sex ratios and the odds that young adults remain never married, controlling for the same multiple individual and metropolitan factors addressed in previous models. Once again, results are presented for 2000, the year for which adequate data are available. Model 1 presents the association between age and race-specific sex ratios amongst the young adult population. In 2000, the metropolitan sex ratio is associated with 15 percent lower odds of having never married for young adults. The inclusion of this covariate does little to diminish the relationship between race and marital status for Non-Hispanic Blacks and Asians so that Blacks are still more likely to remain never married compared to Whites and Asians are less likely to be never married. This means that as the proportion of available men increase in a community, the odds of having never married decreases. Recall, the sex ratio applied is based on the respondent's race/ethnicity.

Table 5.7 Model 2 presents the odds that individuals have never married accounting for an interaction between the race of individual respondents and the metropolitan sex ratio in the area in which they reside. In 2000, this interaction is only significant for Blacks. This means that for Non-Hispanic Blacks, the age specific sex ratio is more important to the odds that Non-Hispanic Blacks have never married in comparison to Whites, than it is for Hispanics or Asians. This means that for Black young adults, sex ratios matter and are an important predictor of whether or not the respondents have ever married compared to other groups. For Blacks, living in an area

with fewer available men would have a stronger and steeper impact in comparison to Whites living within a similar context.

The third set of hypotheses focuses on the probability of marriage varying according to the income segregation of a community. Table 5.8 presents the logistic regression results predicting the relationship between income segregation and the odds of having never married. Model 1 shows that the main effect of metropolitan income segregation is not a significant predictor in predicting marital status. Again, the overall racial/ethnic patterns persist, with Non-Hispanic Blacks, Hispanics, and Asians each having higher odds of having never married compared to Non-Hispanic Whites. Model 2 shows the results for the interaction terms predicting the moderating relationship between income segregation and race on marital status. The results suggest that income segregation may indeed serve as a significant moderator for Hispanics and Asians, slightly decreasing the odds that they have never married when they reside in highly segregated communities compared to the role of income segregation for non-Hispanic Whites. But, the magnitude of these relationships are very small, a reflection of the non-significance of the main effect. Overall it is difficult to conclude that economic segregation in a metropolitan area is associated with marriage patterns among young adults.

**Discussion**

One of the primary goals of this chapter was to determine the importance of race and ethnicity in predicting the odds of having never married, net of a broad and diverse range of personal and contextual characteristics that past studies have established as important factors in the formation of marital relationships. The additive approach used here underscores the strength of these racial and ethnic associations with marital behavior. Predicting these associations over time in the first set of models tests the

strength of these associations, and supports the thesis that an overall delay in marriage is present across all groups and that racial and ethnic difference in marriage persist over time.

The first set of hypotheses predicts the odds of having never married across racial and ethnic groups in comparison to Whites. Blacks were expected to present higher odds of having never married and Hispanics to have lower odds of having never married in comparison to Whites. A third expectation was that there would be no significant difference between Whites and Asians, based on the mix of literature regarding the marital patterns of the Asian population in the United States. Overall, the first set of hypotheses is partially supported. While Blacks are persistently more likely to have never married than Whites across all years, Hispanics are only less likely than Whites in the baseline model. When other individual and contextual characteristics are taken to account, they have as much as a 15 percent higher odds of having never married versus Whites. This suggests that at least part of the explanation of the White-Hispanic difference in marriage may be explained by factors including age, education, nativity, and the metropolitan context. There was no support for the hypothesis that Asians would not be significantly different from Whites. Though only a marginal difference is present in the baseline model, the results of the full models suggest that when all other factors are taken into account, Asians are significantly more likely to have never married than Whites, and this gap is persistent over time.

This models presented in Table 5.5 partially support the first set of hypotheses that race/ethnicity would have a significant relationship to marital status. While the relationship between race/ethnicity and marital status were generally true, the race/ethnic specific hypotheses were not all supported. While Non-Hispanic Blacks has a greater odds of having never married in comparison to Non-Hispanic Whites,

Hispanics were less likely than Whites to have never married in the baseline models, but more likely in the models that included individual and metropolitan level controls. This may be driven by differences in nativity: once a control is added for this characteristic, the outcomes begin to mirror other the Non-Hispanic Black and Asian groups. In fact, these analyses fail to support the hypotheses that there would be no difference between Asian and Non-Hispanic White marital statuses. Asians were close to 40 percent more likely to have never married versus Non-Hispanic Whites. One of the primary drivers of this difference may be linked to the higher levels of educational attainment among this population, reducing the number of Asian young adults that have ever married.

Metropolitan area characteristics are also associated with marriage probabilities suggesting that young people may remain unmarried slightly more often in cities with high levels of manufacturing employment and perhaps in cities with more educated young adults (again a marginally significant pattern across models). Despite the inclusion of these metropolitan characteristics, the analyses here demonstrate persistent racial and ethnic variation in marriage. Therefore, it is important to consider other contextual variations and the possibility that contextual factors do not operate in the same way across groups.

To consider this relationship between context and race/ethnicity, the second set hypotheses predicted the importance of region in predicting marital status. As predicted, region of residence plays an important role in predicting the marital status of young adults partially confirming the second set of hypotheses. Residence in the Midwest, West, and Northeast were each significant associated with a higher odds of having never married compared to residence in the South. Existing literature relates higher levels of religiosity (as measured by attendance at religious services in the past month) as a correlate to younger median ages at first marriage, and the finding here offer some

support (Cherlin 2009; Smith 2015). Though region is a significant predictor, race/ethnicity was still a strong predictor of whether or not individuals had ever married. As a moderator, region of residence was particularly strong for Asians in the Northeast as they are significantly less likely to have never married compared to Southern Whites. Another notable finding was that Non-Hispanic Blacks in the Midwest were significantly more likely to have never married compared to White Southerners. This finding was the only exception: the remaining interaction terms were either non-significant (in the case of Asians in the West or Hispanics in the Northeast) or were associated with significantly lower odds of never having married versus Non-Hispanic Whites in the South.

The results of Table 5.7 predicting the relationship between sex ratios and marital status demonstrate significantly different role of the sex ratio for Non-Hispanic Blacks when compared to Whites, consistent with the previous research finding that African American marriage markets may be much more affected by sex ratios in comparison to other groups (Wilson 1996; Crowder & Tolnay 2000; Banks 2011). The finding in Table 5.7 partially support the hypothesis that sex ratios are important in predicting marital status, but based on the current findings, it is not as important for other groups. Social distance may partly explain the importance of sex ratios for this population versus others. It may also be that other groups are not as sensitive to imbalances because of their greater likelihood to marry outside their racial/ethnic group, and thus have greater availability in potential partners.

Finally, I hypothesized that income segregation in a metropolitan area would be an important factor in marriage patterns and that income segregation would vary in importance as a predictor of remaining never married by race and ethnicity. There was no evidence in the main effect of the relationship between metropolitan income

segregation and marital status, and the interaction terms underscored that this was not important versus other characteristics in predicting marital status.

**Conclusion**

The persistence of the significance of race suggests that race and ethnicity remain primary characteristics in predicting union formation net of other characteristics that have been historically associated with marital status. This finding also supports previous research that race/ethnicity may be the most important factor, even with the well-documented body of studies that suggest the primacy of education and social class as indicative of union formation and current marital status (Hou & Myles 2008; Schwartz & Mare 2013; Aughinbaugh, Robles & Sun 2013). Race/ethnicity continues to be at the forefront of social and demographic disparities, but raises questions about how these characteristics affect not only *whether* individuals have ever married, but if so, *who* they marry. The final analytical chapter (Chapter 6) will contribute to answering this question, by predicting the characteristics associated with intermarriage for the currently married metropolitan young women in 2000.

**Limitations.** One of the limitations of this analysis is that it does not include a measure for religiosity. It has been noted in the previous literature that religiosity is highly correlated with region of residence and in this case, it suggests that the individual levels of religiosity may affect both if and when individuals decide to marry (see Wilcox & Wolfinger 2007). Furthermore, these analyses are limited to the young adult population, currently residing in the selected 190 metropolitan areas in 1990, 2000 and 2006-2010 for Models 1, 2 and 3 in Table 5.6, and in 2000 for the remaining models. Thus non-metropolitan residents and young adults residing outside of the selected areas are not included in the conclusions drawn from this research. Also, this study's findings do not capture the young adult population born after 1990 (who were under 20 years old during

the period of study). This generation, sometimes referred to as the "boomerang generation" has a sizable proportion that have returned to, or continued to live in their parental homes during young adulthood. In 2013, 15.9 percent of men and 9.7 percent of women were unmarried and living with at least one parent (Vespa et al. 2013). Though the current generation of young adults is the most educated in history, they also have the highest aggregate amount of student loan debt and relatively high levels of unemployment or underemployment, contributing to the trend of delaying or foregoing marriage (Vespa et al. 2013; Ivanchev 2014; Gabor, 2014).

# CHAPTER 6

## STUDY 3: CHARACTERISTICS PREDICTING INTERMARRIAGE, 2000

The previous analytical chapters examined two related aspects of marriage prevalence, each with a focus on structure. Chapter 4 predicted the association between select metropolitan characteristics and marriage prevalence. Chapter 5 used both individual and metropolitan characteristics to predict the odds that young adults were currently married during the period of study, with an emphasis on 2000. Like Chapter 5, the present chapter continues the focus on individual and metropolitan characteristics, shifting the lens to the variations in racial/ethnic intermarriage. Using a sample of currently married young women in 2000, these analyses assess the odds of marriage to a spouse from a different racial/ethnic group, also known as intermarriage, versus the odds of marriage to a spouse of the same group (intramarriage).

Racial and ethnic intermarriage has steadily increased over the last 50 years and can be an important indicator of social distance across groups. Geographic variation in intermarriage may suggest the climate of racial/ethnic relations across regions (Fu 2001; Harris & Ono 2005). For instance, in 1980, 6.7 percent of all new marriages were interracial or interethnic (Taylor, Passel & Wang 2010). By 2010, 14.6 percent of all new marriages were intermarriages (Passel, Wang & Taylor 2010). Despite the increase that has occurred over time, intermarriage is a still a relatively rare occurrence among the currently married population in the United States, representing less than 10 percent of all marriages in the United States by 2010 (Wang & Taylor 2010). The overall trend, however, is that intermarriage prevalence has grown precipitously since the landmark 1967 *Loving v. Virginia* decision in the U.S. Supreme Court, which ruled that the prohibition of interracial marriages was unconstitutional (Loving v. Virginia, 1967). Prior

to the *Loving* decision, intermarriage was prohibited in a number of states through the presence of anti-miscegenation laws, making any intermarriage in these contexts illegal (Kennedy 2000; Herman & Campbell 2012).

According to a study of intermarriage conducted by the Pew Research Center using pooled data from 2008-2012, intermarried couples are very similar to intramarried couples with the exception of two characteristics: nativity and region of residence (Wang & Taylor 2012). This chapter will further explore the latter characteristic. Mixed race couples are the least likely to reside in the Midwest region and most likely to reside in the West (Wang & Taylor 2012). This variation in intermarriage can occur across regions for a variety of reasons, including differences in racial/ethnic relations, availability of potential partners of the same racial/ethnic background, and differential use of intermarriage as pathway to assimilation (Johnson & Jacobson 2005; Taylor 2014). Like earlier chapters of this dissertation, this chapter will focus on the structural aspects as explanations to both the racial/ethnic and regional differences in the tendency to intermarry across groups.

The structural perspective centers on the number of available potential partners during the mate selection process. How racial/ethnic group concentration at the metropolitan impacts intermarriage is twofold. On the one hand there may be limitations in the number of potential mates belonging to a specific racial/ethnic group (Blau 1977; Qian 1999). Since most people marry a partner of the same racial/ethnic group, any limitations in the number of potential partners is significant (Blau 1977; Qian 1999; Taylor, Passel, & Wang 2010). To overcome the shortfall of potential mates with similar racial/ethnic characteristics, low relative availability of same-race/same-ethnicity partners thus provides an incentive for individuals to look outside of one's group for a potential spouse (South & Lloyd 1992; Kalmijn 1998; Qian & Lichter 2011). In this case,

the concentration of a particular racial/ethnic group at the metropolitan area would have an impact: an increased presence of in-group potential partners would decrease the prevalence of racial/ethnic intermarriage. The four major regions in the United States vary in their racial compositions meaning that some regions are more likely to have intermarriages versus others because of these racial/ethnic compositional differences. Fewer members of a respective group in the area suggest fewer potential in-group partners.

On the other hand, differences in regional concentrations of each minority group could also suggest an increased likelihood of intermarriage since there are more members of a particular group that are at "risk" for intermarriage to occur within a given group. Wang & Taylor (2012) point out that it is precisely the differences in minority population distributions across regions that is driving at least some of the racial/ethnic and geographic differences in intermarriage prevalence for first marriages (Wang & Taylor 2012; Herman & Campbell 2005). For instance, more Black women in the South are potentially intermarried (in absolute terms), precisely because they encompass a large presence in the region to begin with (See Table6.2).

Based on the structural approach, the characteristics of metropolitan areas beyond their racial/ethnic composition are expected to play a role in the probability of a married woman having a spouse from a different racial/ethnic background. For example, education is associated with intermarriage at the individual level so it may be important to consider education in the metropolitan area overall,, though certain types of pairings (i.e. White-Asian, White-Hispanic, etc.) are more closely linked to education in comparison to other types of pairings (Qian 1997; Harris & Ono 2005;Wang & Taylor 2012).

In sum, the previous studies suggest that among the strongest correlates to intermarriage are the racial/ethnic characteristics of individuals and the region of residence as intermarriage is more likely to occur in some regions (West and South) versus others (the Midwest, and to a lesser degree, the Northeast). Based on these dynamics, Study 3 seeks to answer the following research questions presented here with accompanying hypotheses:

**Research Questions and Hypotheses**

What are the racial/ethnic differences in the likelihood of marriage to a partner from a different racial/ethnic group (intermarriage)? Based on structural theory and the relatively even distribution of the non-Hispanic White population, I expect this population to be the least likely to intermarry. Furthermore, the extant literature suggests that Black women are the least likely to intermarry and that Hispanic and Asian women are much more likely to intermarry compared to Non-Hispanic Whites (Wang 2012). Based on the past research, I hypothesize the following:

H1: There will be a significant association between race/ethnicity and the odds of intermarriage.

H1a: White women will be significantly less likely to be in a current intermarriage in comparison to women Hispanic and Asian women.

H1b: Asian women will have the highest odds of current intermarriage in comparison to women from other racial/ethnic groups.

H1c: Black women will have the lowest odds of intermarriage in comparison to White women.

What role does metropolitan region of residence play in the odds that women will be currently intermarried? Based on differences in racial/ethnic group concentration by region, I expect the following:

H2: There will be a significant association between metropolitan region of residence and the log-odds that women will be currently intermarried.

H2a: Residence in the West will be significantly associated with the highest odds of intermarriage in comparison to residence in other regions.

H2b: Residence in the Midwest will be associated with the lowest probability of intermarriage in comparison to residence in other regions.

Provided there are differences in the concentration of racial/ethnic groups based on the metropolitan region of residence, does region of residence serve as a moderator in the relationship between race/ethnicity and odds of intermarriage? In other words is the magnitude of the relationship between race/ethnicity and intermarriage moderated by the respondent's metropolitan region of residence?

H3: Region will act as moderator in the relationship between race/ethnicity and intermarriage such that metropolitan region of residence will significantly moderate the relationship between race/ethnicity and the log-odds of a current intermarriage in 2000.

**Measures**. The sample consists only of currently married women ages 20-34. Though one of the limitations of using decennial census data is that it does not provide information on marriage order, limiting the sample to younger age groups reduces the likelihood that young women in the sample are in second or higher order marriages at the time of data collection (see Qian 1999). This is especially important to this study as previous research has found a positive relationship between second and higher order marriages and racial/ethnic intermarriage (Wang & Taylor 2012).

*Dependent Variable*. The dependent variable is a dichotomous indicator coded as "1" when a married female respondent has a spouse of a different race/ethnicity and "0" when spouses are of the same racial/ethnic group. The dependent variable reflects only the race/ethnicity of the respondent's spouse. These analyses cannot be interpreted

causally, and therefore cannot explain why women may choose partners of a different racial or ethnic group. In other words, this chapter gleans insight on factors that are statistically associated with intermarriage.

*Independent variables.* The focal independent variables include the four largest racial/ethnic groups in the United States: Non-Hispanic Whites, Non-Hispanic Blacks, Hispanic (of any race) and the Non-Hispanic Asian population. These racial indicators are coded as dummy variables and exclude populations that identify as American Indian/Alaska Native, two or more races or some other race. The decision to exclude these categories is due to their limited sample size, and is explained in greater detail in Chapter 3 (Data and Methods).The exclusion of these groups is consistent with previous literature examining intermarriage patterns across racial/ethnic groups (Fu 2001, Wang & Taylor 2012,).

The second set of independent variables includes the census region where individuals reside. The U.S. Census Bureau divides the United States into four regions: Northeast, Midwest, South and West (see Table 3.1 for a list of metropolitan areas by region). Each region is recoded into dummy variables and the sample respondents are linked to their respective regions based on the location of their metropolitan area according to the 2010 census boundaries. The restriction of the sample to current marital status means that there is no information available regarding where couples resided while single or where they resided prior to the 2000 decennial census. Of course, the larger aggregation of region makes it more likely that couples are residing in the same area as they were prior to marriage but the cross-sectional data do not allow for further exploration of this aspect.

*Controls*. These analyses control for measures that have been associated with marriage outcomes. Study 3 includes controls for metropolitan population size,

metropolitan marriage prevalence (proportion of the metropolitan area currently married), metropolitan educational attainment (proportion earning high school education or less and the proportion with at least a four-year college degree), and the proportion of the employed population working in the manufacturing, self-employed and professional sectors. Additional measures control for individual characteristics that have been previously linked to marital status and/or intermarriage. These measures include nativity (foreign born as the reference category), dummy variables representing educational attainment (high school graduate as the reference category), and age dummy variables (with the 20to24 age group as the reference category) (Wang & Taylor 2012).

**Results**

Table 6.1 presents the descriptive results of the analytical sample for Study 3. The percentage of the married young adult female population residing in metropolitan areas currently married to a spouse of different racial/ethnic category was approximately 3.3 percent in 2000. While this percentage is lower than other estimates using Census data (Wang & Taylor 2012), the difference is likely attributed to the sampling structure of these data, which includes only the 190 selected metropolitan areas and the 5 percent sampling structure of the 1 in 6 sample of the long-form of the U.S. Census 2000. Furthermore, the sample used in this study includes only young adult women between the ages of 20 and 34 years of age, and intermarriage has a higher prevalence among second and higher order marriages (Passel et al. 2010). Whites represent 66% of the total married female population included in the sample while Black, Hispanic, and Asian women represent 6.9 percent, 21.4 percent, and 5.6 percent, respectively.

The regional distribution of the currently married young adult population in 2000 is consistent with the overall patterns found in other research (Elliot & Simmons 2011). The South contains the largest share of the currently married population (35.1 percent),

while the Northeast contains the smallest share (16.9 percent). The Midwest and the West contain intermediate shares of the currently married population (21.8 percent and 26.0 percent respectively).

Table 6.2 presents the regional share of intermarried women in 2000. The results show that the largest share of racial/ethnic intermarriages are in the West (44.7 percent) followed by the South (31.4 percent). Based on the lower levels of racial/ethnic segregation in these regions the results are not particularly surprising as the lower levels of segregation and higher rates of in-migration would suggest greater contact with individuals from different racial/ethnic backgrounds. This is consistent with the findings of similar studies (Johnson & Jacobson 2005; Wang 2012). The relatively small share of intermarriages that occur in the Northeast, however, is not as in line with expectations. Representing only 11.1 percent of all women currently intermarried in 2000, women residing in Northeastern metropolitan areas represent the smallest proportion of intermarriages in the sample. This could partially be explained by the overall later age at first marriage that occurs in the Northeastern region versus other regions, and therefore there is less representation in this sample of young married women. Recall the lowest proportion of young married women live in the Northeast (see Table 6.1). The regional pattern of intermarriage presented in Table 6.2 illustrates the potentially important role that region may play in marriage market composition and consequently, the odds that married women are with partners of a different racial/ethnic group.

There is clearly considerable regional variation in the prevalence of intermarriage, in general. But Table 6.3 demonstrates that there is also considerable variation in the distribution of intermarried women by race/ethnicity. Panel A presents the results for Non-Hispanic White respondents. Consistent with their population numbers, the pattern of intermarriage among Non-Hispanic White women is

comparable to that for the country as a whole. Of all intermarried White women, the largest proportion reside in the West (43.2 percent) followed by the South (32.2 percent), Midwest (16.0 percent) and Northeast (8.3 percent), respectively.

Panel B presents the results for the Black population. The results for currently intermarried Black women differ from the results in the general population. Of all intermarried Black women the greatest share is in the South (nearly 40 percent) followed by the West (31.5 percent) and the Northeast (22.2 percent). The smallest shares of Black intermarriages occur in the Midwest (7.1 percent). This is not necessarily reflective of the population distribution of Black women in general who are more concentrated in the South than in the West yet have relatively high prevalence of intermarriage in both regions, perhaps for different reasons. Further, it should be recalled from Chapter 5 that Black women evidence a greater probability of being never married in the Midwest as well.

Panel C presents the distribution of intermarriage by region for Hispanic women. Like the Non-Hispanic White population, the Hispanic population follows the general trend with the largest share of Hispanic intermarriages occurring in the West (44.9 percent), followed by the South (31.4 percent), the Northeast (12.3 percent) and lastly, the Midwest (11.0 percent).

Panel D presents the results for Asian population. The largest share of intermarriage for Asian women is in metropolitan areas in the West (63.3 percent). This is followed by the South (19.3 percent), the Northeast (11.6 percent), and the Midwest (5.8 percent). Mirroring the patterns seen with the Non-Hispanic White and Hispanic populations, Asian intermarriage follows a similar pattern as the general metropolitan population in the Unites States.

**Multivariate results**. The next step is to consider the extent to which individual and contextual level factors help explain the differential probabilities of intermarriage among young women in the United States. Presented as odds-ratios, the multivariate results for the logistic regression models predict the log-odds (or simply the odds) of having a spouse of a different racial/ethnic group for the currently married female population in 2000. Table 6.4 presents the results of the baseline model (Model 1) predicting relationship between race/ethnicity of the respondent controlling for metropolitan population size. Only Non-Hispanic Black women were less likely to have a spouse of a different racial/ethnic group in comparison to Non-Hispanic White women (approximately 31 percent less likely). Consistent with prior studies, both Hispanic and Asians were more likely to have a spouse of a different race/ethnicity than Non-Hispanic Whites. Asians were 30 percent more likely and Hispanics approximately than five times more likely to have a spouse belonging to a different racial/ethnic group compared to Non-Hispanic whites.

Model 2 assesses the association of race/ethnicity net of individual characteristics, including nativity, educational attainment, employment status and age on the odds of having a spouse from a different racial or ethnic group. After including controls for individual factors, race/ethnicity remains significantly associated with intermarriage. Interestingly, the odds remain nearly the same for African Americans suggesting individual-level characteristics do not account for the racial variation in intermarriage for this group in comparison to Whites. The odds actually become larger for both Hispanics and Asians (9.5 times greater than Non-Hispanic Whites and 2.4 times greater than Non-Hispanics Whites, respectively) when these characteristics are introduced. In other words, after controlling for other individual-level characteristics, Asian and Hispanic women are even more likely to be married to a member of a different

racial/ethnic group, but these individual-level characteristics would appear to explain comparatively little of the Black-White differences in intermarriage.

The next step in the analysis is to consider the role of metropolitan area characteristics on the prevalence of intermarriage across racial/ethnic groups. Model 3 presents the results predicting intermarriage controlling for both individual and metropolitan characteristics. Metropolitan factors include proportion currently married, metropolitan educational attainment, and proportion in each employment sector. Again, the odds for Non-Hispanic Black women remain virtually unchanged, while there is a reduction in the ratios for Hispanic and Asian women once metropolitan level and individual level controls are added. These findings suggest that differences in the geographic distribution of these groups explain some of the variation in intermarriage when compared to non-Hispanic White women.

Table 6.5 displays the second set of models, which test the role of metropolitan region of residence in predicting the odds of having a spouse of a different race/ethnicity. Recall that Hypothesis 2 predicts that women in regions with histories of greater diversity and more tolerance for interracial relationships (i.e. the West) will be more likely to be intermarried than women in other regions. Model 1 results show that women residing in Midwestern, Southern, and Northeastern metropolitan areas each have a lower odds of current intermarriage in comparison to women in Western metropolitan areas when no other predictors are included in the model (67 percent, 42 percent and 62 percent, respectively) mirroring the descriptive patterns. Model 2 includes race and the findings suggest little change for women in the Midwest or South. Notably, the gap narrows for the Northeastern region from approximately 67 percent to 36 percent lower odds of intermarriage compared to women residing in Western metropolitan areas. This reduction in magnitude points to the importance of race in racial/ethnic intermarriage

net of regional differences in metropolitan residence. Specifically, intermarriage is not uniform across populations, when accounting for individual characteristics.

In Model 3 intermarriage is estimated using individual-level controls (nativity, employment status, education and age) as well as race and region. Reflecting the results from model 2, there is very little change in the odds of intermarriage for each region. The largest change is for women residing in the Northeastern metropolitan areas, where the odds of intermarriage is reduced to just43 percent lower than for women residing in Western metropolitan areas.

Finally, Model 4 presents the results when all controls, both at the individual and metropolitan level, are included in the analysis. The results show that once metropolitan and individual characteristics are held constant, the variability across metropolitan areas becomes much lower though residence in Western metropolitan areas is still significantly associated with a higher probability of intermarriage than all other regions. For instance, the odds of intermarriage in Southern metropolitan areas are just over 20 percent lower in comparison to married women in the West. For women in Northeastern and Midwestern metropolitan areas, the odds are 29.7 percent and 27.1 percent respectively. This finding suggests that part of the variation in regional differences is explained by the population and economic characteristics of the metropolitan areas themselves and the fact that these characteristics are more concentrated in some regions versus others.

Tables 6.4 and 6.5 present the results when predicting intermarriage with race/ethnicity and region as focal independent variables. Table 6.6 presents the analyses capturing the how the magnitude of the relationship between race/ethnicity and intermarriage is moderated by region of residence. The models include interaction terms for race/ethnicity and region, and rely on the largest group of intermarried women in the sample (White women living in the West) as the reference group (see Table 6.3). The

results of the multivariate analyses with interactions show that, in comparison to White women living in Western metropolitan areas (the reference category), Black women in Midwestern and Southern metropolitan areas have lower odds of intermarriage. Notably, the odds are higher for Black women in Northeastern metropolitan areas compared to White women in the West. Hispanic women in metropolitan areas across all regions have greater odds of intermarriage in comparison to the reference category, though the effect is only marginally significant for Hispanic women in Southern metropolitan areas perhaps reflecting their smaller overall presence in the South. For Asian women, only residence in Northeastern metropolitan areas was associated with higher odds of intermarriage in comparison to the reference group, similar to the pattern observed among Black women. Asian women residing in Midwestern or Southern metropolitan areas were not associated with a significant difference from White women in Western metropolitan areas. Another way to interpret these interactions is that racial and ethnic minority women in the Northeast are generally more likely to be intermarried but there is greater variation in the probabilities of intermarriage by race/ethnicity in other regions possibly reflecting the regional distribution of these groups. As an example, there are lower odds of intermarriage for Blacks in the Midwest and South where there are larger metropolitan populations of Blacks, but higher odds of intermarriage in these same regions among Hispanics who are perhaps less isolated within urban areas. There is no variation for Asians when compared to Whites in the Midwest and South where Asians are less concentrated than in the cities of the West and Northeast.

**Discussion**

There are important variations in the probability of marriage to a partner from a different race or ethnic background. The analyses presented here demonstrate that these variations stem from individual-level characteristics but also point to significant

geographic variation in intermarriage by race/ethnicity. In other words, women in the United States have very different probabilities of intermarriage depending on their own race/ethnicity and location.

The first hypothesis for this chapter predicted that White women would have the lowest odds of intermarriage in comparison to Black, Hispanic, and Asian women. This hypothesis was partially supported by these analyses. While White women have the lowest odds of intermarriage in comparison to Asian and Hispanic women, Black women are the least likely to be in a current intermarriage in 2000. This relationship was persistent, even after controlling for both individual and metropolitan level characteristics. This finding is consistent with other studies that have examined racial/ethnic intermarriage by gender (Qian 1999; Wang & Taylor 2012), and is perhaps at least partially attributed to personal preferences regarding in-group marriage that are more pervasive among Black women in comparison to other groups of women (Harris & Ono 2005; Banks 2011).

An important finding is the magnitude of Hispanic women's likelihood of intermarriage. While Model 1 demonstrates greater likelihood of intermarriage among Hispanics compared to Whites, the addition of individual controls changes the Hispanic coefficient considerably (just over 5 times greater than Whites in Model 1 versus nearly 9.5 times higher in Model 2). A separate analysis was run including all control variables except nativity status. The results confirm that nativity status is a key driver in the difference between Hispanic and White women's intermarriage differences. For Hispanic women, the foreign born appear less likely to intermarry than their native counterparts, and this finding is consistent with previous research (see Qian, Batson, & Glick 2012). For Hispanics, this finding does not offer support for an assimilation hypothesis, though the exclusion of nativity status in the analysis has little impact on the

odds of intermarriage for Asian women, suggesting that nativity status may uniquely affect the Hispanic population. Though the addition of metropolitan controls does not change the overall relationship between race/ethnicity and intermarriage, the coding of intermarriage could be a factor to be explored in future analysis.

The next set of hypotheses in this chapter predicted that there would be a significant relationship between region of residence and the odds that women would be currently intermarried. Young women with residence in the Northeastern, Midwestern or Southern metropolitan areas are less likely to have a spouse of a different race/ethnicity compared to respondents that live in metropolitan areas in the West. This finding confirms Hypothesis 2a that women residing in Western metropolitan areas would have the greatest odds of current intermarriage. A higher likelihood of intermarriage in the West is consistent with the fact that the West contains metropolitan areas that are the port of entry for the most recent waves of immigration, as Latin Americans and Asians are the largest foreign-born populations in the U.S. since 1965 (Krogstad & Keegan 2015). Hypothesis 2b was not fully supported: with the exception of Model 2 in Table 6.5, generally women in the Northeast have the lowest odds of intermarriage in comparison to women in other regions. The only exception is when race was taken into account with no additional factors.

The findings in the baseline model predicting the relationship between metropolitan region of residence and intermarriage align with recent data from the Migration Policy Review study, showing that the Southern region contained the largest number of states with the fastest growth in immigration populations (Migration Policy Review 2011). The weakening of the relationship between region and intermarriage once race/ethnicity is controlled, underscores the primacy of racial/ethnic characteristics in intermarriage differences.

The last contribution of the analyses in this chapter points to the importance of the interaction between race/ethnicity and metropolitan region of residence, specifically how metropolitan region of residence can serve as a moderator in predicting the relationship between race/ethnicity and intermarriage. The moderating effect of region of residence was significant for all racial/ethnic groups with the exception of Asians residing in the Midwestern or Southern metropolitan areas. The interplay between race/ethnicity and metropolitan region of residence is complex, and the results suggest that the magnitude of the relationship varies significantly based on whom and where. The findings also lend support to structural arguments that suggest the relative number of an in-group population has an impact on intermarriage for racial/ethnic minority groups: on average, the more in-group partners available, the less likely intermarriage occurs for racial/ethnic minority populations (Blau 1977; Qian 1999). For instance, the odds of Hispanics residing in Midwestern metropolitan areas having a spouse of a different racial/ethnic group is over four times higher than the odds for White women living in Western metropolitan areas. In Northeastern metropolitan areas the odds for Hispanic women is near 4.5 times the odds for White women in the West. In the Southern and Midwestern regions, the respective odds of Black women currently intermarried are 65 percent lower and 57 percent lower than White women residing in Western metropolitan areas. But, residence in the Northeast is associated with 30 percent higher odds of intermarriage in comparison to White women in the West, possibly explained by the greater propensity to delay marriage in this region, and the greater likelihood of intermarriage that is associated with this delay (Porterfield 1982; Qian 1999).

## Conclusion

Aside from regional differences in the concentrations of the four racial/ethnic groups in this study are regional differences in sociopolitical climates. There may also be important differences in the relative acceptance vis à vis the prevalence of intermarriage in certain regions versus others (Herman & Campbell 2012). In this case, in addition to the racial/ethnic composition of a region, regional culture may play a role on individual choices to pursue, and eventually marry partners based on the level of interaction and cultural characteristics of metropolitan areas within regions (Herman & Campbell 2012). For instance, the Midwest is somewhat less racially/ethnically diverse than other regions in the United States (overwhelmingly comprised of Non-Hispanic Whites and Blacks), but like the Northeast, racial segregation is more prevalent, limiting the interactions between groups (. This lack of diversity could suggest less compromise for partnering across racial/ethnic lines or in other words, more enduring social boundaries between groups (Herman & Campbell 2012; Harris & Ono 2005). The current study does not measure this complex factor.

**Limitations.** While the findings of this study offer great insight on how both race/ethnicity and metropolitan region of residence factor into intermarriage for young adult women, there are some limitations. The first is that this study only analyzes a sample of women in the 2000. As explained in detail in the footnotes, changes in the structure of the Census questionnaire over the period of 1990-2010 would likely lead to significant bias and difficulty comparing analyses relying on self-identified race/ethnicity. Intermarriages in this chapter are defined as marriages with a spouse that marked a different racial and/or ethnic (Hispanic-origin) category than the respondent. The variable is constructed from respondents' self-identity. Because the choices in those

identities were not consistent across censuses, any estimates yielded by the results would not be comparable to any other census year.

Unlike the independent variables included in Study 2, the current study emphasis race and region, and does not emphasize the relationship between factors such as income segregation (proportion of the metropolitan population residing in poor census tracts) or sex ratios. Income segregation was a significant factor in the previous analyses and so for purposes of parsimony it was not included here. Sex-ratios are not examined because the sample includes the population that is currently married, metropolitan sex-ratios are less important in this case.

Another limitation is that the preceding analyses do not include migration information. This confines the extent of the conclusions stated here since the data did not include information on marriage timing, when the respondent began residing in the metropolitan area of residence and therefore if marriage occurred before or after residence in the metropolitan area (before or after marriage). Nor, does this analysis determine with any certainty that the current marriages are first marriages. For instance, information about whether migration occurred before marriage because of intermarriage (i.e. local hostility) could provide information This chapter endeavored to reduce some of the bias by focusing on those who are relatively young and married, but migration could bias the results, nonetheless.

This study's conclusions are limited to women and spouses that identify as mono-racial White, Black, or Asian. Hispanic of any race was treated as a racial category. This means that individuals that might in fact be the same race (according to the questionnaire) as their spouse would be coded as intermarried if their spouse is of Hispanic origin. This choice in coding may have led to biased estimates, due to overestimating the number of intermarriages in the sample.

Beyond the coding choices related to Hispanics, there are also limitations with groups omitted from the study. If a respondent or spouse identified as "some other race" or more than one race, they were excluded from the analysis. This may underestimate the prevalence of intermarriage as individuals from smaller groups will have less opportunity to marry within their racial group. Likewise, the analyses may overestimate intermarriage by excluding those who identify with more than one race. The conclusions for the analyses should be considered cautiously given the exclusion of these populations, and their relatively higher rates of intermarriage. Future research considering the marriage choices among the growing population of individuals identifying as multiethnic and multiracial should be explored.

Finally, this chapter assumes that women will select a partner of a different racial/ethnic background rather than delaying or foregoing marriage altogether. These alternative explanations vary bases on race/ethnicity and gender dynamics. For instance, Kent (2010) finds that intermarriage is prevalent among Asian women, but only part of the explanation is linked to the lack of available men of Asian descent. Another aspect suggests that there may be preferences to marry men from other groups, specifically White men, as either a pathway to assimilation or as a form of status exchange (Tsunokai, Kposowa & Adams 2009; Torche & Rich 2014). On the other hand, Black women are more likely to delay or forego marriage rather than search for a potential partner from a different racial group, with reasons ranging from personal preferences to discrimination from non-Black singles in the dating pool (Paset & Taylor 1991; Tsunokai et al. 2009; Kent 2010; Rodrigue & Reeves 2015; see also Cohen 2014) Still, in recent years, the intermarriage rates for Black women have increased (Wang 2015).

# CHAPTER 7

# CONCLUSION

The purpose of this dissertation was to examine the relationship between race/ethnicity and marriage prevalence. Race/ethnicity is often a topic of focus in the marriage and union formation literature. Yet, many studies do not incorporate contextual and temporal characteristics simultaneously when examining this topic. Furthermore, the current study focused on four racial/ethnic groups in terms of the individual characteristics they possess, and the structural environments in which they live at the time of data collection. Study 1, and to some degree Study 2, incorporated a temporal component in order to observe the changes in these relationships over time. The results of the dissertation generated three general conclusions based on the overarching research questions discussed in detail below. One of the main focuses of the preceding studies was to determine the relationship between race/ethnicity and marriage through the incorporation of contextual and individual determinants.

The goal of chapter 4 (Study 1) was to determine the relationship between metropolitan (structural) characteristics and metropolitan marriage prevalence over time. The results showed that in 1990, the proportions of the metropolitan population that were Non-Hispanic White and Non-Hispanic Black were significantly associated with metropolitan level marriage prevalence. Congruent with what could be expected from the existing literature, the proportion of the population comprised of Whites was positively associated with marriage prevalence while the size of the Black population was negatively associated. By 2000, the White, Hispanic, and Asian proportions were significantly associated with marriage prevalence. This meant that for each unit increase the size of these populations, marriage prevalence increased at the metropolitan level. However, by 2010, none of the racial/ethnic categories were significant. Meanwhile

during the same period other structural characteristics increased in their importance. Characteristics associated with social class rose in importance, and by 2010, characteristics such as income segregation, metropolitan educational attainment and proportion of the population in each employment sector mattered most.

Chapter 5 sought to take the findings in Chapter 4 a step further by incorporating how these structural characteristics relate to the odds that young adults had never married. As found in Chapter 4, Chapter 5's first set of models estimated this relationship for 1990, 2000, and 2010. Unlike the metropolitan-level models found in Chapter 4, the results in Chapter 5 also suggest that race is an enduring predictor of having never been married and , in general, the relationship between race/ethnicity and marriage is not impacted very much by the addition of other predictors. This is also evidence that social structure has a varying impact on different populations and its effects are not applied evenly (Blau 1994). The analytical models that tested the moderating effects of income segregation, sex ratios and region underscore this finding. The results demonstrated that region and sex ratios affect individuals differently, depending on the racial/ethnic group to which they belong. For Blacks, age and race-specific sex ratios mattered, while there was not a significant relationship for other groups. On the other hand, region moderated the relationship to marriage for all racial/ethnic groups, and in various ways depending on where individuals reside and the racial/ethnic group to which they belong.

Motivated by the rise in the percentage of Americans that identify as biracial or multiracial, Chapter 6 tested the relationship between race/ethnicity and the odds that currently married women would have a spouse from a different racial/ethnic group. Chapter 6 also examined the relationship between respondents' region of residence and the odds of current racial/ethnic intermarriage. The findings here suggest that Asian

and Hispanic women have higher odds of intermarriage in comparison to Non-Hispanic Whites, but that Black women have lower odds of intermarriage. This is consistent with the existing literature. The fact that Black women in the Northeast were associated with higher odds of intermarriage in comparison to White women in the West was unexpected. Part of the explanation behind this anomaly could be explained by the way that race/ethnicity is coded throughout the dissertation, which I discuss in greater detail below.

The findings of this dissertation are supported by William Julius Wilson's claim of the "declining significance of race" (1978). Though misconstrued by some of his readers, Wilson's central thesis was that not that race no longer mattered, but that it was the interaction of race with other factors, particularly with social class and all of its associated characteristics (i.e. access to social capital, education, employment opportunities, housing, etc.), that is an increasingly important factor. The associated class characteristics are intrinsically linked to social structure as the axis from which daily social life occurs. Wilson referenced the fact that blatant racism no longer excluded people of color outright, in the ways that it had in the pre-Civil Rights era (Wilson 1978). In the post-Civil Rights era race is more insidious. Compared to the past, it appears that people have better access to social institutions and marry more freely. However, class differences moderate racial/ethnic experiences such that poor racial/ethnic minorities experiences society and its institutions differently than more affluent racial/ethnic minorities. So while generationally, young metropolitan populations are shying away from marriage as an institution, other structural characteristics complicate this shift, as compositional factors within sub-populations are critical (resulting in a much more precipitous decline in marriage for the Black population, in particular) (Cohen 2014).

In terms of the social institution studied in this dissertation, the results are multi-faceted. Study 1 demonstrates evidence of a convergence of racial/ethnic groups in terms of marriage and marriage prevalence. One the one hand, and on its surface, the findings illustrate that metropolitan-level racial composition seems to matter less over time. . On the other hand, this conclusion becomes much more complicated in Study 2 when individuals are examined. A closer look demonstrates how moderating factors affect each sub-population differently. These findings underscore the importance of racial/ethnic differences and why it is important to avoid broad and general conclusions when examining the complexities of both people and place. Furthermore, they support Blau's argument that social structure creates differences based on stratification systems (Blau 1994).

**Limitations**

Though the findings of this dissertation contribute to the literature on racial/ethnic differences, marriage, and geographic region, there are several limitations. The first is that this study is limited to the young adult population between the ages of 20 and 34. Young adults are less likely to have ever married compared to any point in U.S. history (Traister 2016). As explained in Chapter 3, keeping the sample size within this age group was the best way to minimize second and higher order marriages. In other words, I cannot confirm that marriages that are included in Chapters 5 or 6 are first marriages.

Second, the sample is comprised of young adults residing in 190 metropolitan areas, and excludes the population that does not live in a metropolitan area or in the remaining 177 metropolitan areas in the United States. It is possible that the inclusion of respondents living in rural areas or in the remaining areas would change the results. As of the 2010 decennial census, approximately 19.3 percent of the population resides in

rural areas, or areas that "are not encompassed with an urban area (at least 50,000 people or an urban cluster (between 2,500 and 50,000 people) (U.S. Census Bureau 2010). In other words, rural areas contain less than 2,500 people within their geographic boundaries. One assumption of using metropolitan areas as proxy for marriage markets is that individuals are expected to move about the metropolitan area for work, leisure and other activities. It is within these metropolitan areas that individuals presumably encounter, or at least have access to, a large number of potential mates at a given time. Because rural areas are much more isolated, contain smaller populations, and thus, are less densely populated, mate selection, marriage timing, and other marriage dynamics may differ from what is observed in metropolitan areas (Bramlett & Mosher 2002; Uecker & Stokes 2008). Furthermore, differences in family structure educational attainment and religion may also affect marriage timing differently in rural contexts (McLaughlin, Lichter & Johnston 1993; Uecker & Stokes 2008).

Aside from young people living in rural areas, the preceding analyses does not account for young adults residing in 277 of the 367 metropolitan areas in the United States in 2010. Since this study excludes more metropolitan areas than it includes, there is a strong possibility that the results would be different with the inclusion of the omitted metropolitan areas. An additional limitation regarding the metropolitan level information is that I did not include information, nor did I control for, differences in the age/sex structure of the metropolitan areas included in the preceding chapters. These differences may influence the results, especially in Study 1 which predicted metropolitan marriage prevalence. The universe that I used to calculate marriage prevalence included the total population in the denominator, not just the adult population eligible for marriage. Based on this calculation, an older population structure is more likely to have a

higher marriage prevalence in comparison to a young population structure since there would be people in the population "at risk" for marriage.

One of the most important limitations across the three studies is the operationalization of race/ethnicity. First, because of these changes in the census questionnaire between 1990 and 2000, I excluded the population that identified as more than one race in 2000 or 2010. The ability to select more than one race did not begin until 2000. Excluding the multiracial population could have underestimated the size of each racial group, biasing the comparisons over time in Chapter 5. The second limitation is that all respondents of Hispanic origin are coded as Hispanic and are therefore treated as a race. This is problematic since people of Hispanic-origin can be any race. In particular, Chapter 6 predicted the odds that currently married women were intermarried. At least some of the Hispanic women were married to spouses of the same race, though they may not be of Hispanic origin. This is not captured in the coding scheme used in this dissertation, and therefore, some of the intermarriages are likely overestimated. There is also evidence that some respondents do not fully understand the distinction between race and Hispanic Origin items on the census and ACS questionnaires, and may select answers that do not necessarily align with how they identify (Liebler et al. 2014). In their study of mate selection among Hispanics, Qian and Cobas (2004) decompose the Hispanic/Latino population into Whites and Non-Whites in addition to national origin, to understand marriage patterns beyond the Latino/non-Latino dichotomy. Their findings suggest that non-White Hispanics overwhelmingly partner with other non-Whites and White-Hispanics typically marry other Whites (Qian & Cobas 2004). Employing a similar approach in future research would help to disentangle this issue, providing more meaningful results.

A similar issue is present with the Asian category, which encompasses a diverse range of geographic origins, cultures and linguistic groups. In preceding studies, the Asian population was defined in a manner consistent with the U.S. Census Bureau (citations). It is possible that the results in Study 3 underestimates intermarriage for the Asian population since two disparate cultural-linguistic groups could marry, but count as an Asian marriage because of the way they are coded in the study (for instance an Indian husband with a Japanese wife). An approach to consider in future research is to decompose the Asian population by linguistic group or national origin group to attempt a more accurate estimate (Qian & Cobas 2004; Qian, Glick & Batson 2012).

A similar issue is possible with respondents of Middle Eastern/North African backgrounds. The Census and ACS questionnaires direct individuals with Northern African and Middle Eastern origins to select White. The U.S. Office of Management and Budget (OMB) currently define "White" as a person having origins in any of the original peoples of Europe, the Middle East or North Africa (Hixson et al. 2011). However, a marriage between one spouse of Middle Eastern or North African (sometimes referred to as MENA) descent to a partner with origins in western Europe is sociologically of interest, especially because recent survey data suggest that social distance between these two populations is particularly heightened (Abdulrahim, James, Yamout & Baker 2012). Because of these issues, the Census Bureau is currently testing additional options in preparation for the 2020 U.S. Census, but unfortunately, the MENA category was not an option during earlier censuses and therefore not included in the preceding analyses as a separate category (U.S. Census 2015). Finally, American Indian and Alaska Native young adults are not included in the preceding analyses and the exclusion of these groups limit the conclusions drawn here.

Beyond the intricacies of how the racial/ethnic categories are constructed here and in census data, there are within group differences in where populations cluster. For instance, a sizable share of the Hispanic population in Florida is comprised of Cuban Americans, while the largest share of Hispanics in Arizona are of Mexican origin. In the Washington D.C. area, Salvadorans are the largest proportion of Hispanics (Brown & Lopez 2013). This impacts marriage since these groups vary in educational attainment, generational composition and racial composition (Acosta & Cruz 2011)

Finally, the increase in the number of cohabiting couples has had an impact in the growth and size of the "never married" population. Cohabitation is a complex phenomenon and an "incomplete institution" (Cherlin 2009). In some cases, cohabitation is a step in the marriage process. Many cohabit before marriage, either during the dating phase, or immediately prior to marriage during their engagement. For other couples, it can stand as a substitute for marriage. This may be especially prevalent in populations with lower socioeconomic statuses (Bumpass & Lu 2000; Edin & Reed 2005; Smock, Manning, & Porter 2005), or among some Hispanic-origins where consensual unions (informal marriages) are indistinguishable from legal unions (Thornton, Axinn & Yu 2008; Walker 2016).

REFERENCES


Abdulrahim, S., James, S. A., Yamout, R., & Baker, W. (2012). Discrimination and psychological distress: Does Whiteness matter for Arab Americans?. *Social science & medicine*, *75*(12), 2116-2123.

Acosta, Y. D., & De la Cruz, G. P. (2011). *The foreign born from Latin America and the Caribbean: 2010*. US Department of Commerce, Economics and Statistics Administration, US Census Bureau.

Adimora, A. A., Schoenbach, V. J., Bonas, D. M., Martinson, F. E., Donaldson, K. H., & Stancil, T. R. (2002). Concurrent sexual partnerships among women in the United States. *Epidemiology*, *13*(3), 320-327.

Amato, P. R., Johnson, D. R., Booth, A., & Rogers, S. J. (2003). Continuity and change in marital quality between 1980 and 2000. *Journal of marriage and family*, *65*(1), 1-22.

Aughinbaugh, A., Robles, O., & Sun, H. (2013). Marriage and divorce: patterns by gender, race, and educational attainment. *Monthly Lab. Rev.*, *136*, 1.

Banks, R. R. (2011). *Is marriage for white people?: How the African American marriage decline affects everyone*. Penguin.

Berube, A. (2012). State of metropolitan America: Educational attainment. Retrieved from: http://www.brookings.edu/blogs/the-avenue/posts/2012/05/31-educational-attainment-berube

Bernstein, R. (2013). Asian fastest growing race or ethnic group in 2012, Census Bureau reports. Release number CB13-112. Retrieved from http://www.census.gov/newsroom/press-releases/2013/cb13-112.html

Beauregard, R. A. (2013). 3 Shrinking Cities in the United States in Historical Perspective. *Shrinking Cities: International Perspectives and Policy Implications*, 33.

Bitler, M. P., Gelbach, J. B., Hoynes, H. W., & Zavodny, M. (2004). The impact of welfare reform on marriage and divorce. *Demography*, *41*(2), 213-236.

Blau, P. M. (1994). *Structural contexts of opportunities*. University of Chicago Press.

Blau, P.M. (1977). *Inequality and Heterogeneity*. New York: Free Press.

Blau, P. M., Blum, T. C., & Schwartz, J. E. (1982). Heterogeneity and intermarriage. *American Sociological Review*, 45-62.

Bonilla-Silva, E. (2004). From bi-racial to tri-racial: Towards a new system of racial stratification in the USA. *Ethnic and Racial Studies*, *27*(6), 931-950.

Bramlett, M. D., & Mosher, W. D. (2001). First marriage dissolution, divorce, and remarriage. In *National Center for Health Statistics*.

Brien, M. J. (1997). Racial differences in marriage and the role of marriage markets. *Journal of Human Resources*, 741-778.

Brown, A., & Lopez, M. H. (2013). Mapping the Latino population, by state, county and city. *Washington, DC: Pew Research Center*.

Bumpass, L., & Lu, H. H. (2000). Trends in cohabitation and implications for children's family contexts in the United States. *Population studies*, *54*(1), 29-41.

Cherlin, A. J. (2004). The deinstitutionalization of American marriage. *Journal of Marriage and Family*, *66*(4), 848-861.

Cherlin, A. J. (2009). *The marriage-go-round*. Knopf: New York.

Cherlin, A., Cumberworth, E., Morgan, S. P., & Wimer, C. (2013). The effects of the great recession on family structure and fertility. *The ANNALS of the American Academy of Political and Social Science*, *650*(1), 214-231.

Choi, K., & Seltzer, J. (2009). With (or without) this ring: Race, ethnic, and nativity differences in the demographic significance of cohabitation in women's lives. *California Center for Population Research*.

Crowder, K. D., & Tolnay, S. E. (2000). A new marriage squeeze for black women: The role of racial intermarriage by black men. *Journal of Marriage and Family*, *62*(3), 792-807.

Cohen, P. (2014). Especially if they're black: A shortage of men for poor women to marry. Retrieved from https://familyinequality.wordpress.com/2014/02/05/marriage-shortage/

Cohn, D., J. S. P., Wang, W., & Livingston, G. (2011). Barely half of US adults are married–A record low. *Pew Research Social & Demographic Trends*.

Conley, D. (1999). *Being black, living in the red: Race, wealth, and social policy in America*. Univ of California Press.

Cooke, T. (2011). Marriage markets and the intermetropolitan distribution of skilled couples. *Growth and Change*, *42*(1), 98-110.

Copen, C. E., Daniels, K., Vespa, J., & Mosher, W. D. (2012). First marriages in the United States: Data from the 2006-2010 National Survey of Family Growth (National Health Statistics, No. 49).

Dixon, P. (2009). Marriage among African Americans: What does the research reveal?. *Journal of African American Studies*, *13*(1), 29-46

Edin, K., & Reed, J. M. (2005). Why don't they just get married? Barriers to marriage among the disadvantaged. *The Future of Children*, *15*(2), 117-137.

Elliott, D. B., Krivickas, K., Brault, M. W., & Kreider, R. M. (2012). Historical marriage trends from 1890-2010: A focus on race differences. In *annual meeting of the Population Association of America (SEHSD Working Paper no. 2012-12), San Francisco, CA, May* (pp. 1987-2010).

Elliott, D. B., & Simmons, T. (2011). *Marital events of Americans: 2009*. Washington, DC: US Department of Commerce, Economics and Statistics Administration, US Census Bureau.

Ennis, S. R., Rios-Vargas, M., & Albert, N. G. (2014). The Hispanic Population 2010: 2010 Census Briefs. Washington, DC: US Census Bureau; 2011.

Fitch, C. A., & Ruggles, S. (2000). Historical trends in marriage formation: The United States 1850-1990. *The ties that bind: Perspectives on marriage and cohabitation*, 59-88.

Fossett, M. A., & Kiecolt, K. J. (1991). A methodological review of the sex ratio: Alternatives for comparative research. *Journal of Marriage and the Family*, 941-957.

Frazier, E. F. (1939). Negro family in the United States. University of Chicago Press.

Frey, W. H. (2011). *Melting pot cities and suburbs: Racial and ethnic change in metro America in the 2000s*. Brookings Institution, Metropolitan Policy Program.

Frey, W. H. (2006). Diversity spreads out: Metropolitan shifts in Hispanic, Asian, and Black populations since 2000. *Living Cities Census Series*, 1-28.

Frey, W. H., & Singer, A. (2006). *Katrina and Rita impacts on Gulf Coast populations: First census findings*. Washington: Brookings Institution, Metropolitan Policy Program.

Fry, R., & Taylor, P. (2012). The rise of residential segregation by income. *Pew Research Center*. Retrieved from http://www.pewsocialtrends.org/2012/08/01/the-rise-of-residential-segregation-by-income/

Fu, V. K. (2001). Racial intermarriage pairings. *Demography*, *38*(2), 147-159.

Gabor, M. (2014). New college degree in hand: now what?. *Monthly Lab. Rev.*, *137*, 1.

Glenn, N. D., & Shelton, B. A. (1985). Regional differences in divorce in the United States. *Journal of Marriage and the Family*, 641-652.

Glick, J. E., Walker, L., & Luz, L. (2013). Linguistic isolation in the home and community: Protection or risk for young children?. *Social science research*, *42*(1), 140-154.

Grieco, E. M., Trevelyan, E., Larsen, L., Acosta, Y. D., Gambino, C., De La Cruz, P., ... & Walters, N. (2012). The size, place of birth, and geographic distribution of the foreign-born population in the United States: 1960 to 2010.*Population Division Working Paper*, *96*.

Gould, E. D., & Paserman, M. D. (2003). Waiting for Mr. Right: rising inequality and declining marriage rates. *Journal of Urban Economics*, *53*(2), 257-281.

Greenhaus, J. H., & Beutell, N. J. (1985). Sources of conflict between work and family roles. *Academy of management review*, *10*(1), 76-88.

Greenwood, J., Guner, N., Kocharkov, G., & Santos, C. (2012). *Technology and the changing family: A unified model of marriage, divorce, educational attainment and married female labor-force participation* (No. w17735). National Bureau of Economic Research.

Halliday Hardie, J., & Lucas, A. (2010). Economic factors and relationship quality among young couples: Comparing cohabitation and marriage. *Journal of Marriage and Family*, *72*(5), 1141-1154.

Harris, D. R., & Ono, H. (2005). How many interracial marriages would there be if all groups were of equal size in all places? A new look at national estimates of interracial marriage. *Social Science Research*, *34*(1), 236-251.

Herman, M. R., & Campbell, M. E. (2012). I wouldn't, but you can: Attitudes toward interracial relationships. *Social science research*, *41*(2), 343-358

Hixson, L., Hepler, B. & Kim, M.O. (2011). The white population: 2010. US Department of Commerce, Economics and Statistics Administration, U.S. Census Bureau.

Hoeffel, E. M., Rastogi, S., Kim, M. O., & Hasan, S. (2012). The Asian population: 2010. US Department of Commerce, Economics and Statistics Administration, US Census Bureau.

Hou, F., Wu, Z., Schimmele, C., & Myles, J. (2015). Cross-country variation in interracial marriage: a USA–Canada comparison of metropolitan areas. *Ethnic and Racial Studies*, *38*(9), 1591-1609.

Hou, F., & Myles, J. (2008). The changing role of education in the marriage market: Assortative marriage in Canada and the United States since the 1970s.*Canadian Journal of Sociology/Cahiers canadiens de sociologie*, *33*(2), 337-366.

Humes, K., Jones, N. A., & Ramirez, R. R. (2011). *Overview of race and Hispanic origin, 2010*. US Department of Commerce, Economics and Statistics Administration, US Census Bureau.

Huston, T. L., & Melz, H. (2004). The case for (promoting) marriage: The devil is in the details. *Journal of Marriage and Family*, *66*(4), 943-958.

Iceland, J., Sharp, G., & Timberlake, J. M. (2013). Sunbelt rising: Regional population change and the decline in black residential segregation, 1970–2009. *Demography*, *50*(1), 97-123.

Isen, A., & Stevenson, B. (2010). *Women's education and family behavior: Trends in marriage, divorce and fertility* (No. w15725). National Bureau of Economic Research.

Islam, N. S., Khan, S., Kwon, S., Jang, D., Ro, M., & Trinh-Shevrin, C. (2010). Methodological issues in the collection, analysis, and reporting of granular data in Asian American populations: historical challenges and potential solutions. *Journal of Health Care for the Poor and Underserved*,*21*(4), 1354.

Ivanchev, Y. (2014). Student loan debt: a deeper look. *Monthly Labor Review*.

Johnson, B.R. & Jacobson, C.K. (2005). Contact in context: An examination of social settings on whites' attitudes toward interracial marriage. *Social Psychology Quarterly,* 68(4): 387-399.

Kalmijn, M. (1998). Intermarriage and homogamy: Causes, patterns, trends. *Annual review of sociology*, 395-421.

Kalmijn, M. (2010). Educational Inequality, Homogamy, and Status Exchange in Black-White Intermarriage: A Comment on Rosenfeld1. *American Journal of Sociology*, *115*(4), 1252-1263.

Kennedy, R. (2000). The enforcement of anti-miscegenation laws.*Interracialism: Black-White Intermarriage in American History, Literature, and Law*, 140-161.

Kent, M.M.. (2010). *Most Americans marry within their race* Population Reference Bureau. Retrieved from http://www.prb.org/Publications/Articles/2010/usintermarriage.aspx

King, M., Ruggles, S., Alexander, J. T., Flood, S., Genadek, K., Schroeder, M., ... & Vick, R. (2010). Integrated public use microdata series. *Current Population Survey: Version*, *3*(3).

Kreider, R. M., & Ellis, R. (2011). *Number, Timing, and Duration of Marriages and Divorces, 2009*. US Department of Commerce, Economics and Statistics Administration, US Census Bureau.

Lewis, S. K., & Oppenheimer, V. K. (2000). Educational assortative mating across marriage markets: Non-Hispanic whites in the United States.*Demography*, *37*(1), 29-40.

Lichter, D. T., Anderson, R. N., & Hayward, M. D. (1995). Marriage markets and marital choice. *Journal of Family Issues*, *16*(4), 412-431.

Lichter, D. T., LeClere, F. B., & McLaughlin, D. K. (1991). Local marriage markets and the marital behavior of black and white women. *American journal of Sociology*, 843-867.

Lichter, D. T., McLaughlin, D. K., & Ribar, D. C. (2002). Economic restructuring and the retreat from marriage. *Social Science Research*, *31*(2), 230-256.

Liebler, C. A., Rastogi, S., Fernandez, L. E., Noon, J. M., & Ennis, S. R. (2014). America's churning races: Race and ethnic response changes between Census 2000 and the 2010 Census. *Center for Administrative Records Research and Applications Working Paper*, *9*.

Lillard, L. A., & Waite, L. J. (1995). 'Til death do us part: Marital disruption and mortality. *American Journal of Sociology*, 1131-1156.

Lloyd, K. M. (2006). Latinas' transition to first marriage: An examination of four theoretical perspectives. *Journal of Marriage and Family*, *68*(4), 993-1014.

Lloyd, K. M., & South, S. J. (1996). Contextual influences on young men's transition to first marriage. *Social Forces*, *74*(3), 1097-1119.

Logan, J. R., Xu, Z., & Stults, B. J. (2014). Interpolating US decennial census tract data from as early as 1970 to 2010: A longitudinal tract database. *The Professional Geographer*, *66*(3), 412-420.

Loving v. Virginia, 388 U.S. 1, 87 S. Ct. 1817, 18 L. Ed. 2d 1010 (1967).

Mackun, P., & Wilson, S. (2011). *Population distribution and change: 2000 to 2010. 2010 Census Briefs, United States Census 2010, US Census Bureau* (No. C2010BR-01). Retrieved from: http://www.census.gov/prod/cen2010/briefs/c2010br-01.pdf

Martin, S. (2004). Women's education and family timing: Outcomes and trends associated with age at marriage and first birth. In K. Neckerman (Eds.), *Social inequality*, New York, NY: Russell Sage Foundation.

Massey, D. S., & Denton, N. A. (1993). *American apartheid: Segregation and the making of the underclass*. Harvard University Press.

Mather, M., & Lavery, D. (2010). In US, proportion married at lowest recorded levels. *Washington DC: Population Reference Bureau*.

McClendon, M. (2002). Multiple regression and causal analysis. Waveland Press.

McClendon, D., Kuo, J. C. L., & Raley, R. K. (2014). Opportunities to meet: occupational education and marriage formation in young adulthood. *Demography*, *51*(4), 1319-1344.

McLaughlin, D. K., Lichter, D. T., & Johnston, G. M. (1993). Some women marry young: Transitions to first marriage in metropolitan and nonmetropolitan areas. *Journal of Marriage and the Family*, 827-838.

Morgan, S. P., & Teachman, J. D. (1988). Logistic regression: Description, examples, and comparisons. *Journal of Marriage and Family*, *50*(4), 929-936.

Moynihan Report. (1965). The negro family: The case for national action. Washington, DC: Office of planning and research. United States Department of Labor. Retrieved from http://www.dol.gov/oasam/programs/history/webid-meynihan.htm

Musick, K., Brand, J. E., & Davis, D. (2012). Variation in the relationship between education and marriage: Marriage market mismatch?. *Journal of Marriage and Family*, *74*(1), 53-69.

Oppenheimer, V.K. (1988). A theory of marriage timing. *American Journal of Sociology,* 563-591.

Oppenheimer, V.K. (1994). Women's employment and the future of the family in industrial societies. *Population and Development Review,* 293-342.

Oppenheimer, V. K., Kalmijn, M., & Lim, N. (1997). Men's career development and marriage timing during a period of rising inequality. *Demography*, *34*(3), 311-330.

Oppenheimer, V. K. (1997). Women's employment and the gain to marriage: The specialization and trading model. *Annual review of sociology*, 431-453.

Oropesa, R. S., & Landale, N. S. (2004). The future of marriage and Hispanics.*Journal of Marriage and family*, *66*(4), 901-920.

Pandit, C. (2011). The impact of foreclosures on crime in American cities. *Sociological Insight*, *3*, 82-109.

Paset, P. S., & Taylor, R. D. (1991). Black and white women's attitudes toward interracial marriage. *Psychological reports*, *69*(3), 753-754

Passel, J. S., Wang, W., & Taylor, P. (2010). One-in-seven new US marriages is interracial or interethnic. *Pew Social & Demographic Trends*. Retrieved from: http://www.pewsocialtrends.org/files/2010/10/755-marrying-out.pdf

Patillo-McCoy, M. (1999). Black Picket Fences: Peril and Privilege among the Black Middle Class.

Payne, K. K. (2014). Marriage Rate in the US, 2013. *National Center for Family and Marriage Research: Family Profiles, FP-14*, *15*, 1-3.

Perry, M.J & Mackun, P.J. (2001). Population change and distribution: 1990-2000. *Census 2000 Brief. United States Census 2000, US Census Bureau* (No.C2KBR01-2).Retrieved from: http://www.census.gov/prod/2001pubs/c2kbr01-2.pdf.

Powers, D.A. & Xie, Y. (2008). Statistical methods for categorical data analysis. 2nd edition.

Qian, Z. (1997). Breaking the racial barriers: Variations in interracial marriage between 1980 and 1990. *Demography*, *34*(2), 263-276.

Qian, Z. (1999). Who intermarries? Education, nativity, region, and interracial marriage, 1980 and 1990. *Journal of comparative family studies*, 579-597.

Qian, Z., Blair, S. L., & Ruf, S. D. (2001). Asian American Interracial and Interethnic Marriages: Differences by Education and Nativity. *International Migration Review*, *35*(2), 557-586.

Qian, Z., Glick, J. E., & Batson, C. D. (2012). Crossing boundaries: Nativity, ethnicity, and mate selection. *Demography*, *49*(2), 651-675.

Qian, Z., & Preston, S. H. (1993). Changes in American marriage, 1972 to 1987: Availability and forces of attraction by age and education. *American Sociological Review*, 482-495.

Qian, Z., & Lichter, D. T. (2007). Social boundaries and marital assimilation: Interpreting trends in racial and ethnic intermarriage. *American Sociological Review*, *72*(1), 68-94.

Qian, Z., & Lichter, D. T. (2011). Changing patterns of interracial marriage in a multiracial society. *Journal of Marriage and Family*, *73*(5), 1065-1084.

Qian, Z., Blair, S. L., & Ruf, S. D. (2001). Asian American Interracial and Interethnic Marriages: Differences by Education and Nativity. *International Migration Review*, *35*(2), 557-586.

Raley, R. K., Sweeney, M. M., & Wondra, D.. (2015). The Growing Racial and Ethnic Divide in U.S. Marriage Patterns. *The Future of Children*, *25*(2), 89–109. Retrieved from http://www.jstor.org.ezproxy1.lib.asu.edu/stable/43581974

Reardon, S. F., & Bischoff, K. (2011). Growth in the residential segregation of families by income, 1970-2009. *US 2010 Project*.

Rodrigue, E. & Reeves, R.C. (2015). Single black female BA seeks educated husband: Race, assortative mating and inequality. Retrieved from http://www.brookings.edu/blogs/social-mobility-memos/posts/2015/04/09-race-assortative-mating-inequality-reeves

Ross, N. A., Nobrega, K., & Dunn, J. (2001). Income segregation, income inequality and mortality in North American metropolitan areas. *GeoJournal*, *53*(2), 117-124.

Rothwell, J. (2012). Education, job openings, and unemployment in metropolitan America. *Metropolitan Policy Program at Brookings, Brookings Institution*.

Ruggles, S., Sobek, M., Alexander, T., Fitch, C. A., Goeken, R., Hall, P. K., ... & Ronnander, C. (2010). Integrated Public Use Microdata Series: Version 3.0 [Machine-readable database]. Minneapolis: Minnesota Population Center [producer and distributor], 2004.

Rumbaut, R. G. (2004). Ages, life stages, and generational cohorts: Decomposing the immigrant first and second generations in the United States1. *International Migration Review*, *38*(3), 1160-1205.

Ryan, C. L., & Siebens, J. (2012). Educational attainment in the United States: 2009. *Washington, DC: US Census Bureau*, P20-566.

Sampson, R. J., Morenoff, J. D., & Gannon-Rowley, T. (2002). Assessing "neighborhood effects": Social processes and new directions in research. *Annual review of sociology*, 443-478.

Sayer, L. C. (2005). Gender, time and inequality: Trends in women's and men's paid work, unpaid work and free time. *Social forces*, *84*(1), 285-303.

Seccombe, K. (2000). Families in poverty in the 1990s: Trends, causes, consequences, and lessons learned. *Journal of Marriage and Family*, *62*(4), 1094-1113.

Schoen, R. (1983). Measuring the tightness of a marriage squeeze. *Demography*, *20*(1), 61-78.

Schmidt, L. (2008). Risk preferences and the timing of marriage and childbearing. *Demography*, *45*(2), 439-460.

Schwartz, C. R. (2010). Earnings inequality and the changing association between spouses' earnings. *AJS; American journal of sociology*, *115*(5), 1524.

Schwartz, C. R., & Mare, R. D. (2012). The proximate determinants of educational homogamy: The effects of first marriage, marital dissolution, remarriage, and educational upgrading. *Demography*, *49*(2), 629-650.

Schwartz, C. R. (2013). Trends and variation in assortative mating: Causes and consequences. *Annual Review of Sociology*, *39*, 451-470.

Schwartz, C. R., & Mare, R. D. (2005). Trends in educational assortative marriage from 1940 to 2003. *Demography*, *42*(4), 621-646.

Schwadel, P. (2013). Changes in Americans' Strength of Religious Affiliation, 1974–2010. *Sociology of Religion*, *74*(1), 107-128.

Scommenga, P. (2011). Least segregated U.S. metros concentrated in fast-growing south and west. *Population Reference Bureau*. Retrieved from: http://www.prb.org/Publications/Articles/2011/us-residential-segregation.aspx

Seitz, S., Ríos-Rull, J. V., & Tanaka, S. (2013). Sex Ratios and Long-Term Marriage Trends. In *2013 Meeting Papers* (No. 1349). Society for Economic Dynamics.

Shafer, K., & Qian, Z. (2010). Marriage timing and educational assortative mating. *Journal of Comparative Family Studies*, 661-691.

Smith, G. (2015). America's Changing Religious Landscape. *Washington, DC: Pew Research Center*. Retrieved from http://www.pewforum.org/files/2015/05/RLS-08-26-full-report.pdf.

Smock, P. J. (2004). The wax and wane of marriage: Prospects for marriage in the 21st century. *Journal of Marriage and Family*, *66*(4), 966-973.

Smock, P. J., Manning, W. D., & Porter, M. (2005). "Everything's there except money": How money shapes decisions to marry among cohabitors. *Journal of Marriage and Family*, *67*(3), 680-696.

South, S. J., & Crowder, K. D. (1999). Neighborhood effects on family formation: Concentrated poverty and beyond. *American Sociological Review*, 113-132.

South, S. J., & Crowder, K. D. (2000). The declining significance of neighborhoods? Marital transitions in community context. *Social Forces*, *78*(3), 1067-1099.

South, S. J., & Lloyd, K. M. (1992). Marriage opportunities and family formation: Further implications of imbalanced sex ratios. *Journal of Marriage and the Family*, 440-451.

Spielman, S. E., Folch, D., & Nagle, N. (2014). Patterns and causes of uncertainty in the American Community Survey. *Applied Geography*, *46*, 147-157.

Taylor, P., Fry, R., Cohn, D., Wang, W., Velasco, G., & Dockterman, D. (2010). Women, men and the new economics of marriage. *Pew Research Center*.

Teachman, J., & Crowder, K. (2002). Multilevel models in family research: Some conceptual and methodological issues. *Journal of Marriage and Family*,*64*(2), 280-294.

Thornton, A., Axinn, W. G., & Xie, Y. (2008). *Marriage and cohabitation*. University of Chicago Press.

Torche, F., & Rich, P. (2014) Declining racial stratification in marriage choices? Trends in Black-White Status Exchange in the US 1980-2010 Working paper no. 2014-16, NYU Population Center.

Torr, B. M. (2011). The changing relationship between education and marriage in the United States, 1940-2000. *Journal of family history*, 0363199011416760.

Towe, C., & Lawley, C.. (2013). The Contagion Effect of Neighboring Foreclosures. *American Economic Journal: Economic Policy*, *5*(2), 313–335.

Traister, R. (2016). All the single ladies: Unmarried women and the rise of an independent nation. Simon and Schuster: New York.

Trent, K., & South, S. J. (2003). Spousal alternatives and marital relations. *Journal of Family Issues*, *24*(6), 787-810.

Tsunokai, G. T., Kposowa, A. J., & Adams, M. A. (2009). Racial preferences in internet dating: A comparison of four birth cohorts. *Western Journal of Black Studies*, *33*(1), 1.

Tucker, M. B., & Mitchell-Kernan, C. (1990). New trends in Black American interracial marriage: The social structural context. *Journal of Marriage and the Family*, 209-218.

Uecker, J. E., & Stokes, C. E. (2008). Early marriage in the United States. *Journal of Marriage and Family*, *70*(4), 835-846.

U.S. Census Bureau (1994). Metropolitan areas: Classification of metropolitan areas. *Geographic Areas Reference Manual*. Retrieved from https://www.census.gov/geo/reference/garm.html

U.S. Censis Bureau (2010). 2010 census urban and rural classification and urban area criteria. Retrieved from https://www.census.gov/geo/reference/ua/urban-rural-2010.html

U.S. Census Bureau (2013). Metropolitan and micropolitan: About metropolitan and micropolitan statistical areas. Retrieved from https://www.census.gov/population/metro/about/

U.S. Census Bureau (2015). National Content Test 2015. Retrieved from https://www.census.gov/programs-surveys/decennial-census/2020-census/research-testing/testing-activities/2015-census-tests/national-content-test.html

U.S. Department of Education, National Center for Education Statistics. (2015). Digest of Education Statistics, 2013 (NCES 2015-011), Chapter 3

Waite, L., & Gallagher, M. (2002). *The case for marriage: Why married people are happier, healthier and better off financially*. Broadway Books.

Walker, L.M. (2016). *Deinstitutionalized marriage.* The Wiley Encyclopedia of Family Studies, 1-3.
DOI: 10.1002/9781119085621.wbefs317

Wang, W. (2014).*The best and worst cities for women looking to marry*. Pew Research Center.

Wang, W., Parker, K., & Taylor, P. (2013). Breadwinner moms: Mothers are the sole or primary provider in four-in-ten households with children: Public conflicted about growing trend. Pew Research Center. Retrieved from http://www.pewsocialtrends.org/2013/05/29/breadwinner-moms/.

Wang, W., & Taylor, P. (2012). *The rise of intermarriage: Rates, characteristics vary by race and gender*. Pew Research Center.

Wang, W., & Parker, K. C. (2014). *Record share of Americans have never married: As values, economics and gender patterns change*. Pew Research Center, Social & Demographic Trends Project.

Wang, W. (2015). Interracial Marriage: Who Is "Marrying out". *Washington, DC: Pew Research Center, June*. Retrieved from http://www.pewresearch.org/fact-tank/2015/06/12/interracial-marriage-who-is-marrying-out/

Warner, T. D., Manning, W. D., Giordano, P. C., & Longmore, M. A. (2011). Relationship Formation and Stability in Emerging Adulthood: Do Sex Ratios Matter?. *Social forces*, *90*(1), 269-295.

White, J. M., & Klein, D. M. (2008). *Family theories*. Sage: Thousand Oaks, CA.

Whitton, S. W., Stanley, S. M., Markman, H. J., & Johnson, C. A. (2013). Attitudes toward divorce, commitment, and divorce proneness in first marriages and remarriages. *Journal of Marriage and Family*, *75*(2), 276-287.

Wilcox, W. B., & Wolfinger, N. H. (2007). Then comes marriage? Religion, race, and marriage in urban America. *Social Science Research*, *36*(2), 569-589.

Wilson, W.J.(1978). The declining significance of race: Black and changing American institutions. *Chicago: University of Chicago.*

Wilson, W.J. (1987). The truly disadvantaged: The inner city, the underclass, and public policy. *Chicago: University of Chicago*.

Wilson, W.J. (1996). When work disappears: The world of the new urban poor. New York: Alfred Knopf.

Wilson, D., & Wouters, J. (2003). Spatiality and growth discourse: The restructuring of America's rust belt cities. *Journal of Urban Affairs*, *25*(2), 123-138.

Yabiku, S. T. (2004). Marriage timing in Nepal: Organizational effects and individual mechanisms. *Social Forces*, *83*(2), 559-586.

Yabiku, S. T. (2006). Neighbors and neighborhoods: effects on marriage timing. *Population Research and Policy Review*, *25*(4), 305-327.

Lee, S. M., and K. Yamanaka. Patterns of Asian American intermarriage and marital assimilation. *Journal of Comparative Family Studies* (1990): 287-305.

Zhou, M. (1997). Segmented assimilation: Issues, controversies, and recent research on the new second generation. *The International Migration Review,* 31(4): 975-1008.

APPENDIX A

CHAPTER 2 TABLES

Table 2.1 Racial/Ethnic Distribution by Region, United States 1990-2010

| | | 1990 | 2000 | 2010 |
|---|---|---|---|---|
| Northeast | Non-Hispanic white | 82.8 | 77.5 | 70.1 |
| | Non-Hispanic black | 11 | 11.4 | 11.8 |
| | Hispanic | 7.4 | 9.8 | 12.6 |
| | Asian | 2.6 | 4 | 5.5 |
| Midwest | Non-Hispanic white | 87.2 | 83.6 | 80 |
| | Non-Hispanic black | 9.6 | 10.1 | 10.4 |
| | Hispanic | 2.9 | 4.9 | 7 |
| | Asian | 1.3 | 1.9 | 2.6 |
| South | Non-Hispanic white | 76.8 | 72.6 | 62.1 |
| | Non-Hispanic black | 18.5 | 18.9 | 19.2 |
| | Hispanic | 7.9 | 11.6 | 15.9 |
| | Asian | 1.3 | 1.9 | 2.8 |
| West | Non-Hispanic white | 75.8 | 68.5 | 57.3 |
| | Non-Hispanic black | 5.4 | 4.9 | 4.8 |
| | Hispanic | 19.1 | 24.3 | 28.6 |
| | Asian | 7.1 | 7.9 | 9.3 |

Source: U.S. Census Bureau 1990, 2001 & 2010

*Note: Results shown as percentages*

Table 2.2 Fastest Growing Metropolitan Areas, 1990-2000

| | Population | | |
|---|---|---|---|
| Metropolitan Statistical Area (MSA) | 1990 | 2000 | **% Change** |
| Las Vegas, NV-AZ | 852737 | 1563282 | **83.3** |
| Naples, FL | 152099 | 251377 | **65.3** |
| Yuma, AZ | 106895 | 160026 | **49.7** |
| McAllen-Edinburg-Mission, TX | 383545 | 569463 | **48.5** |
| Austin-San Marcos, TX | 846227 | 1249763 | **47.7** |
| Fayetteville-Springdale-Rogers, AR | 210908 | 311121 | **47.5** |
| Boise City, ID | 295851 | 432345 | **46.1** |
| Phoenix-Mesa, AZ | 2238480 | 3251876 | **45.3** |
| Laredo, TX | 133239 | 193117 | **44.9** |
| Provo-Orem, UT | 263590 | 368536 | **39.8** |

Source: Perry & Mackun (2011) U.S. Census Bureau

Table 2.3 Fastest Growing Metropolitan Areas, 2000- 2010

| | Population | | |
|---|---|---|---|
| Metropolitan Statistical Area (MSA) | 2000 | 2010 | **%Change** |
| Palm Coast, Fl | 49832 | 95696 | **92.0** |
| St. George, UT | 90354 | 138115 | **52.9** |
| Las Vegas-Paradise, NV | 1375765 | 1951269 | **41.8** |
| Raleigh-Cary, NC | 797071 | 1130490 | **41.8** |
| Cape Coral-Fort Myers, FL | 440888 | 681754 | **40.3** |
| Provo-Orem, UT | 376774 | 150036 | **39.8** |
| Greely, CO | 180926 | 252825 | **39.7** |
| Austin-Round Rock-San Marcos, TX | 1249763 | 1716289 | **37.3** |
| Myrtle Beach-North Myrtle Beach-Conway, SC | 196629 | 269291 | **37.0** |
| Bend OR | 115367 | 157733 | **36.7** |

Source: Mackun & Wilson (2011) U.S. Census Bureau

Table 2.4 Population Change by Region, 1990-2000

| | Population | | | |
|---|---|---|---|---|
| Region | 1990 | 2000 | 2010 | **% Change 1990-2010** |
| Northeast | 50,809,229 | 53,594,378 | 55,317,240 | **8.1%** |
| Midwest | 59,668,632 | 64,392,776 | 66,927,001 | **10.8%** |
| South | 85,445,930 | 100,236,820 | 114,555,744 | **25.4%** |
| West | 52,786,082 | 63,197,932 | 71,945,553 | **26.6%** |

Source: Perry & Mackun (2011) U.S. Census Bureau

APPENDIX B

CHAPTER 3 TABLES

Table 3.1 Census-Designated Metropolitan Areas included in Analyses

| **Metropolitan Area Name** | |
|---|---|
| Abilene, TX | Charlotte-Gastonia-Concord, NC-SC |
| Albany-Schenectady-Troy, NY | Chattanooga, TN-GA |
| Albuquerque, NM | Chicago-Naperville-Joliet, IL-IN-WI |
| Alexandria, LA | Chico, CA |
| Allentown-Bethlehem-Easton, PA-NJ | Cincinnati-Middletown, OH-KY |
| Amarillo, TX | Clarksville, TN-KY |
| Anchorage, AK | Cleveland-Elyria-Mentor, OH |
| Anniston-Oxford, AL | College Station-Bryan, TX |
| Appleton, WI | Colorado Springs, CO |
| Asheville, NC | Columbia, MO |
| Atlanta-Sandy Springs-Marietta, GA | Columbia, SC |
| Austin-Round Rock, TX | Columbus, OH |
| Baton Rouge, LA | Corpus Christi, TX |
| Beaumont-Port Arthur, TX | Dallas-Fort Worth-Arlington, TX |
| Bellingham, WA | Davenport-Moline-Rock Island, IA-IL |
| Billings, MT | Dayton, OH |
| Binghamton, NY | Decatur, AL |
| Birmingham-Hoover, AL | Decatur, IL |
| Bloomington, IN | Deltona-Daytona Beach-Ormond Beach, FL |
| Bloomington-Normal, IL | Denver-Aurora-Broomfield, CO |
| Boise City-Nampa, ID | Des Moines-West DeS Moines, IA |
| Boston-Cambridge-Quincy, MA-NH | Detroit-Warren-Livonia, MI |
| Brownsville-Harlingen, TX | Duluth, MN-WI |
| Buffalo-Niagara Falls, NY | Eau Claire, WI |
| Canton-Massillon, OH | El Paso, TX |
| Cape Coral-Fort Myers, FL | Elkhart-Goshen, IN |
| Cedar Rapids, IA | Erie, PA |
| Champaign-Urbana, IL | Eugene-Springfield, OR |
| Charleston-North Charleston-Summerville, SC | Fayetteville, NC |

Table 3.1 (continued) Census-Designated Metropolitan Areas included in Analyses

| **Metropolitan Area Name** | |
|---|---|
| Fayetteville-Springdale-Rogers AR-MO | Knoxville, TN |
| Florence-Muscle Shoals, AL | Lafayette, IN |
| Fort Collins-Loveland, CO | Lafayette, LA |
| Fort Wayne, IN | Lakeland-Winter Haven, FL |
| Fresno, CA | Lancaster, PA |
| Gainesville, FL | Lansing-East Lansing, MI |
| Grand Rapids-Wyoming, MI | Las Cruces, NM |
| Green Bay, WI | Las Vegas, Paradise, NV |
| Greensboro-High Point, NC | Lexington-Fayette, KY |
| Greenville-Mauldin-Easley, SC | Lima, OH |
| Gulfport-Biloxi, MS | Lincoln, NE |
| Harrisburg-Carlisle, PA | Little Rock-North Little Rock-Conway, AR |
| Hartford-West Hartford-East Hartford, CT | Longview, TX |
| Hickory-Lenoir-Morganton, NC | Los Angeles-Long Beach-Santa Ana, CA |
| Honolulu, HI | Louisville/Jefferson County, KY-IN |
| Houma-Bayou Cane-Thibodaux, LA | Lubbock, TX |
| Houston-Sugar Land-Baytown, TX | Macon, GA |
| Indianapolis-Carmel, IN | Madison, WI |
| Jackson, MI | Mansfield, OH |
| Jackson, MS | McAllen-Edinburg-Mission TX |
| Jacksonville, NC | Medford, OR |
| Janesville, WI | Memphis, TN-MS-AR |
| Johnson City, TN | Merced, CA |
| Joplin, MO | Miami-Fort Lauderdale-Pompano Beach, FL |
| Kalamazoo-Portage, MI | Milwaukee-Waukesha-West Allis, WI |
| Kansas City, MO-KS | Minneapolis-St. Paul-Bloomington, MN-WI |
| Kennewick-Pasco-Richland, WA | Mobile, AL |
| Killeen-Temple-Fort Hood, TX | Modesto, CA |

Table 3.1 (continued) Census-Designated Metropolitan Areas included in Analyses

| **Metropolitan Area Name** | |
|---|---|
| Monroe, LA | Rochester, NY |
| Montgomery, AL | Rockford, IL |
| Muncie, IN | Sacramento-Arden-Arcade-Roseville, CA |
| Nashville-Davidson-Murfreesboro-Franklin, TN | Saginaw-Saginaw Township North, MI |
| New Orleans-Metairie-Kenner, LA | Salinas, CA |
| New York-Northern New Jersey-Long Island, NY-NJ-CT | Salt Lake City, UT |
| Niles-Benton Harbor, MI | San Antonio, TX |
| Ocala, FL | San Diego-Carlsbad-San Marcos, CA |
| Odessa, TX | San Francisco-Oakland-Fremont, CA |
| Oklahoma City, OK | Santa Barbara-Santa Maria-Goleta, CA |
| Omaha-Council Bluffs, NE-IA | Santa Fe, NM |
| Orlando-Kissimmee, FL | Savannah, GA |
| Palm Bay-Melbourne-Titusville, FL | Scranton-Wilkes Barre, PA |
| Pensacola-Ferry Pass-Brent, FL | Seattle-Tacoma-Bellevue, WA |
| Peoria, IL | Sheboygan, WI |
| Philadelphia-Camden-Wilmington, PA-NJ-DE-MD | Shreveport-Bossier City, LA |
| Phoenix-Mesa-Scottsdale, AZ | South Bend-Mishawaka, IN-MI |
| Pittsburgh, PA | Spokane, WA |
| Portland-Vancouver-Beaverton, OR-WA | Springfield, IL |
| Providence-New Bedford-Fall River, RI-MA | Springfield, MA |
| Provo-Orem, UT | Springfield, MO |
| Pueblo, CO | St. Cloud, MN |
| Raleigh-Cary, NC | St. Louis, MO-IL |
| Redding, CA | Stockton, CA |
| Reno-Sparks, NV | Syracuse, NY |
| Richmond, VA | Tampa-St. Petersburg-Clearwater, FL |
| Roanoke, VA | Terra Haute, IN |
| Rochester, MN | Toledo, OH |

Table 3.1 (continued) Census-Designated Metropolitan Areas included in Analyses

| **Metropolitan Area Name** |
|---|
| Tucson, AZ |
| Tulsa, OK |
| Tuscaloosa, AL |
| Tyler, TX |
| Utica-Rome, NY |
| Virginia Beach-Norfolk-Newport News, VA-NC |
| Visalia-Porterville, CA |
| Waco, TX |
| Washington-Arlington-Alexandria, DC-VA-MD-WV |
| Waterloo-Cedar Falls, IA |
| Wausau, WI |
| Wichita Falls, TX |
| Wichita Falls, KS |
| Williamsport, PA |
| Wilmington, NC |
| Yakima, WA |
| York-Hanover, PA |
| Youngstown-Warren-Boardman, OH-PA |
| Yuba City, CA |
| Yuma, AZ |

n= 190

Source: Integrated Public-Use Microdata Files, US2010 Longitudinal Tract Database

Table 3.2 Census-Designated Metropolitan Areas by Region

**South**

Abilene, TX MSA
Amarillo, TX
Alexandria, LA MSA
Anniston-Oxford, AL MSA
Asheville, NC MSA
Atlanta-Sandy Springs-Marietta, GA MSA
Austin-Round Rock, TX MSA
Baton Rouge, LA MSA
Beaumont-Port Arthur, TX MSA
Birmingham-Hoover, AL MSA
Brownsville-Harlingen, TX MSA
Cape Coral-Fort Myers, FL MSA
Charleston-North Charleston-Summerville, SC MSA
Charlotte-Gastonia-Concord, NC-SC MSA
Chattanooga, TN-GA MSA
Clarksville, TN-KY MSA
College Station-Bryan, TX MSA
Columbia, SC MSA
Corpus Christi, TX MSA
Dallas-Fort Worth-Arlington, TX MSA
Decatur, AL MSA
Deltona-Daytona Beach-Ormond Beach, FL MSA
El Paso, TX MSA
Fayetteville, NC MSA
Fayetteville-Springdale-Rogers, AR-MO MSA
Florence-Muscle Shoals, AL MSA
Gainesville, FL MSA
Greensboro-High Point, NC MSA
Gainesville, FL MSA
Greensboro-High Point, NC MSA
Greenville-Mauldin-Easley, SC MSA
Gulfport-Biloxi, MS MSA
Hickory-Lenoir-Morganton, NC MSA
Houma-Bayou Cane-Thibodaux, LA MSA
Houston-Sugar Land-Baytown, TX MSA
Jackson, MS MSA
Jacksonville, NC MSA
Johnson City, TN MSA
Killeen-Temple-Fort Hood, TX MSA
Knoxville, TN MSA
Lafayette, LA MSA
Lakeland-Winter Haven, FL MSA
Lexington-Fayette, KY MSA
Little Rock-North Little Rock-Conway, AR MSA
Longview, TX MSA
Louisville/Jefferson County, KY-IN MSA
Lubbock, TX MSA
Macon, GA MSA
McAllen-Edinburg-Mission, TX MSA
Memphis, TN-MS-AR MSA
Miami-Fort Lauderdale-Pompano Beach, FL MSA
Mobile, AL MSA
Monroe, LA MSA
Montgomery, AL MSA
Nashville-Davidson--Murfreesboro--Franklin, TN M
New Orleans-Metairie-Kenner, LA MSA

Table 3.2 (continued) Census-Designated Metropolitan Areas by Region

| **South (Continued)** |
|---|
| Ocala, FL MSA |
| Odessa, TX MSA |
| Oklahoma City, OK MSA |
| Orlando-Kissimmee, FL MSA |
| Palm Bay-Melbourne-Titusville, FL MSA |
| Pensacola-Ferry Pass-Brent, FL MSA |
| Raleigh-Cary, NC MSA |
| Richmond, VA MSA |
| Roanoke, VA MSA |
| San Antonio, TX MSA |
| Savannah, GA MSA |
| Shreveport-Bossier City, LA MSA |
| Tampa-St. Petersburg-Clearwater, FL MSA |
| Tulsa, OK MSA |
| Tuscaloosa, AL MSA |
| Tyler, TX MSA |
| Virginia Beach-Norfolk-Newport News, VA-NC MSA |
| Waco, TX MSA |
| Washington-Arlington-Alexandria, DC-VA-MD-WV MSA |
| Wichita Falls, TX MSA |
| Wilmington, NC |

n=77
Source: U.S. Census Bureau, Integrated Public-Use Microdata Files; US2010 Longitudinal Tract Database

Table 3.2 (Continued) Census-Designated Metropolitan Areas by Region

| **West** | |
|---|---|
| Albuquerque, NM MSA | Salt Lake City, UT MSA |
| Anchorage, AK MSA | San Diego-Carlsbad-San Marcos, CA MSA |
| Bellingham, WA MSA | San Francisco-Oakland-Fremont, CA MSA |
| Billings, MT MSA | Santa Barbara-Santa Maria-Goleta, CA MSA |
| Boise City-Nampa, ID MSA | Santa Fe, NM MSA |
| Chico, CA MSA | Seattle-Tacoma-Bellevue, WA MSA |
| Colorado Springs, CO MSA | Spokane, WA MSA |
| Denver-Aurora-Broomfield, CO MSA | Stockton, CA MSA |
| Eugene-Springfield, OR MSA | Tucson, AZ MSA |
| Fort Collins-Loveland, CO MSA | Visalia-Porterville, CA MSA |
| Fresno, CA MSA | Yakima, WA MSA |
| Honolulu, HI MSA | Yuba City, CA MSA |
| Kennewick-Pasco-Richland, WA MSA | Yuma, AZ |
| Las Cruces, NM MSA | |
| Las Vegas-Paradise, NV MSA | |
| Los Angeles-Long Beach-Santa Ana, CA MSA | |
| Medford, OR MSA | |
| Merced, CA MSA | |
| Modesto, CA MSA | |
| Phoenix-Mesa-Scottsdale, AZ MSA | |
| Portland-Vancouver-Beaverton, OR-WA MSA | |
| Provo-Orem, UT MSA | |
| Pueblo, CO MSA | |
| Redding, CA MSA | |
| Reno-Sparks, NV MSA | |
| Sacramento--Arden-Arcade--Roseville, CA MSA | |
| Salinas, CA MSA | |

n=40

Source: U.S. Census Bureau, Integrated Public-Use Microdata Files, US2010 Longitudinal Tract Database

Table 3.2 Census-Designated Metropolitan Areas by Region

| **Northeast** |
| --- |
| Albany-Schenectady-Troy, NY MSA |
| Allentown-Bethlehem-Easton, PA-NJ MSA |
| Binghamton, NY MSA |
| Boston-Cambridge-Quincy, MA-NH MSA |
| Buffalo-Niagara Falls, NY MSA |
| Erie, PA MSA |
| Harrisburg-Carlisle, PA MSA |
| Hartford-West Hartford-East Hartford, CT MSA |
| Lancaster, PA MSA |
| New York-Northern New Jersey-Long Island, NY-NJ- |
| Philadelphia-Camden-Wilmington, PA-NJ-DE-MD MSA |
| Pittsburgh, PA MSA |
| Providence-New Bedford-Fall River, RI-MA MSA |
| Rochester, NY MSA |
| Scranton--Wilkes-Barre, PA MSA |
| Springfield, MA MSA |
| Syracuse, NY MSA |
| Utica-Rome, NY MSA |
| Williamsport, PA MSA |

n=19
Source: U.S. Census Bureau, Integrated Public-Use Microdata Files, US2010 Longitudinal Tract Database

Table 3.2 (Continued) Census-Designated Metropolitan Areas by Region

| **Midwest** | |
|---|---|
| Appleton, WI MSA | Kalamazoo-Portage, MI MSA |
| Bloomington, IN MSA | Kansas City, MO-KS MSA |
| Bloomington-Normal, IL MSA | Lafayette, IN MSA |
| Midwest | Lansing-East Lansing, MI MSA |
| Canton-Massillon, OH MSA | Lima, OH MSA |
| Cedar Rapids, IA MSA | Lincoln, NE MSA |
| Champaign-Urbana, IL MSA | Madison, WI MSA |
| Chicago-Naperville-Joliet, IL-IN-WI MSA | Mansfield, OH MSA |
| Cincinnati-Middletown, OH-KY-IN MSA | Milwaukee-Waukesha-West Allis, WI MSA |
| Cleveland-Elyria-Mentor, OH MSA | Minneapolis-St. Paul-Bloomington, MN-WI MSA |
| Columbia, MO MSA | Muncie, IN MSA |
| Columbus, OH MSA | Niles-Benton Harbor, MI MSA |
| Davenport-Moline-Rock Island, IA-IL MSA | Omaha-Council Bluffs, NE-IA MSA |
| Dayton, OH MSA | Peoria, IL MSA |
| Decatur, IL MSA | Rochester, MN MSA |
| Des Moines-West Des Moines, IA MSA | Rockford, IL MSA |
| Detroit-Warren-Livonia, MI MSA | Saginaw-Saginaw Township North, MI MSA |
| Duluth, MN-WI MSA | Sheboygan, WI MSA |
| Eau Claire, WI MSA | South Bend-Mishawaka, IN-MI MSA |
| Elkhart-Goshen, IN MSA | Springfield, IL MSA |
| Fort Wayne, IN MSA | Springfield, MO MSA |
| Grand Rapids-Wyoming, MI MSA | St. Cloud, MN MSA |
| Green Bay, WI MSA | St. Louis, MO-IL MSA |
| Indianapolis-Carmel, IN MSA | Terre Haute, IN MSA |
| Jackson, MI MSA | Toledo, OH MSA |
| Janesville, WI MSA | Waterloo-Cedar Falls, IA MSA |
| Joplin, MO MSA | Wausau, WI MSA |
| | Youngstown-Warren-Boardman, OH-PA MSA |

n=55
Source: U.S. Census Bureau, Integrated Public-Use Microdata Files, US2010 Longitudinal Tract Database

APPENDIX C

CHAPTER 4 TABLES

Table 4.1 Study 1: Descriptive Results

| | 1990 | | 2000 | | 2010 | |
|---|---|---|---|---|---|---|
| | Mean | Std. Dev. | Mean | Std. Dev. | Mean | Std. Dev. |
| Marriage Prevalence | 43.48% | 3.789 | 43.28% | 2.71 | 39.77% | 2.96 |
| Independent Variables | | | | | | |
| Percentage White | 77.30% | 14.48 | 73.70% | 17.21 | 69.02% | 17.95 |
| Percentage Black | 11.44% | 10.679 | 11.25% | 10.534 | 11.91% | 10.63 |
| Percentage Hispanic | 7.25% | 8.572 | 10.71% | 15.607 | 13.89% | 16.85 |
| Percentage Asian | 2.03% | 4.9017 | 2.90% | 5.485 | 3.12% | 4.53 |
| Education | | | | | | |
| High School Diploma or Less | 36.06% | 10.646 | 30.85% | 5.424 | 28.14% | 5.15 |
| College Degree or Higher | 12.35% | 4.188 | 14.59% | 4.162 | 3.87% | 0.83 |
| Economic Indicators | | | | | | |
| Percentage Professional | 11.89% | 3.5513 | 14.89% | 3.303 | 15.43% | 3.23 |
| Percentage Manufacturing | 8.47% | 4.7112 | 6.68% | 3.479 | 5.31% | 2.67 |
| Percentage Self-Employed | 3.51% | 1.143 | 4.52% | 0.88913 | 3.87% | 0.89 |
| Percentage In Poor Census Tract | 9.32% | 6.596 | 9.55% | 6.096 | 13.17% | 5.65 |
| Control | | | | | | |
| Metropolitan Population (in millions) | 1.62 | 3.1274 | 1.45 | 2.8205 | 1.60 | 3.00 |

n=190
Source: US 2010 Longitudinal Tract Database

Table 4.2 Multivariate regression analyses predicting marriage prevalence in metropolitan areas, 1990-2010

| | 1990 | | | |
|---|---|---|---|---|
| | Model 1 | Model 2 | Model 3 | Model 4 |
| Total Population | -0.075 | -0.07116 | -0.08131 | -0.08018 |
| | (-1.22) | (-1.14) | (-1.19) | (-1.17) |
| Race/Ethnicity | | | | |
| Proportion White | 0.073 ** | 0.07307 ** | 0.07544 ** | 0.07522 ** |
| | (2.75) | (2.73) | (2.67) | (2.66) |
| Proportion Black | -0.174 *** | -0.17565 *** | -0.17261 *** | -0.173 *** |
| | (-5.70) | (-5.72) | (-5.38) | (-5.38) |
| Proportion Hispanic | -0.0539 | -0.05582 | -0.0532 | -0.05402 |
| | (1.49) | (-1.54) | (-1.43) | (1.44) |
| Proportion Asian | 0.0167 | 0.01804 | 0.01677 | 0.01582 |
| | (0.43) | (0.46) | (0.40) | (0.38) |
| Education | | | | |
| Proportion High School Graduate or less | | 0.01167 | | 0.01095 |
| | | (0.64) | | (0.40) |
| Proportion College degree or above | | -0.08108 | | -0.03707 |
| | | (-0.38) | | (-0.15) |
| Economic Characteristics | | | | |
| Proportion living in Poor Census Tract | | | 0.01125 | 0.0095 |
| | | | (0.36) | (0.30) |
| Proportion Manufacturing | | | -0.00608 | -0.01308 |
| | | | (-0.11) | (-0.23) |
| Proportion Self-Employed | | | 9.51e-05 | -0.0251 |
| | | | (0.00) | (-.012) |
| Proportion Professional | | | 0.1177 | 0.06653 |
| | | | (0.45) | (0.23) |
| Adjusted $R^2$ | 0.5254 | 0.5239 | 0.5161 | 0.5138 |
| n=190 | | | | |

Note: Parentheses display t-values
*Source: Brown University US2010 Longitudinal Tract Database*

Table 4.2 (Continued) Multivariate regression analyses predicting marriage prevalence in metropolitan areas, 1990-2010

| | 2000 | | | |
|---|---|---|---|---|
| | Model 1 | Model 2 | Model 3 | Model 4 |
| Total Population | -0.07342 | -0.408 | -0.0303 | -0.07531 |
| | (-1.28) | (-0.78) | (-0.51) | (-1.31) |
| Race/Ethnicity | | | | |
| Proportion White | 0.23162 * | 0.12623 | 0.31026 ** | 0.21533 * |
| | (2.09) | (1.24) | (2.93) | (2.08) |
| Proportion Black | 0.0803 | -0.02935 | 0.16382 | 0.07588 |
| | (0.74) | (-0.29) | (1.57) | (0.75) |
| Proportion Hispanic | 0.16735 | 0.06144 | 0.23815 * | 0.15412 |
| | (1.49) | (0.60) | (2.25) | (1.50) |
| Proportion Asian | 0.16404 | 0.0916 | 0.25312 * | 0.17555 |
| | (1.41) | (0.86) | (2.29) | (1.64) |
| Education | | | | |
| Proportion High School Graduate or less | | 0.17517 *** | | 0.17237 *** |
| | | (6.42) | | (4.26) |
| Proportion College degree or above | | 0.28878 * | | 0.28876 * |
| | | (2.20) | | (2.31) |
| Economic Characteristics | | | | |
| Proportion living in Poor Census Tract | | | 0.01973 | 0.0132 |
| | | | (0.83) | (0.58) |
| Proportion Manufacturing | | | 0.14068 ** | 0.08201 |
| | | | (2.74) | (1.61) |
| Proportion Self-Employed | | | 0.64735 ** | 0.69834 *** |
| | | | (3.14) | (3.54) |
| Proportion Professional | | | -0.62487 *** | -0.41157 *** |
| | | | (-4.05) | (-2.65) |
| Adjusted $R^2$ | 0.3728 | 0.4851 | 0.5012 | 0.5449 |
| n=190 | | | | |

Note: Parentheses display t-values

*Source: Brown University US2010 Longitudinal Tract Database*

Table 4.2 (Continued) Multivariate regression analyses predicting marriage prevalence in metropolitan areas, 1990-2010

| | 2010 | | | |
|---|---|---|---|---|
| | Model 1 | Model 2 | Model 3 | Model 4 |
| Total Population | 0.04768 | 0.07799 | 0.14108 ** | 0.10162 * |
| | (-0.87) | (1.50) | (2.69) | (1.96) |
| Race/Ethnicity | | | | |
| Proportion White | 0.08022 | 0.02675 | 0.08788 | 0.03584 |
| | (0.85) | (0.30) | (1.01) | (0.42) |
| | | | - | - |
| Proportion Black | -0.11215 | -0.1721 † | 0.04916 | 0.10169 |
| | (-1.20) | (-1.95) | (-0.58) | (-1.22) |
| Proportion Hispanic | - | - | | - |
| | 0.01226 | 0.06697 | 0.01686 | 0.02589 |
| | (-0.13) | (-0.75) | (0.20) | (-0.31) |
| | | - | | |
| Proportion Asian | 0.02078 | 0.00684 | 0.08203 | 0.03179 |
| | (0.16) | (0.06) | (0.71) | (0.28) |
| Education | | | | |
| Proportion High School Graduate or less | | 0.14991 *** | | 0.14262 *** |
| | | (5.17) | | (3.71) |
| Proportion College degree or above | | - | | - |
| | | 0.43528 * | | 0.34913 * |
| | | (-2.51) | | (-2.06) |
| Economic Characteristics | | | | |
| Proportion living in Poor Census Tract | | | - | - |
| | | | 0.13798 *** | 0.14086 |
| | | | (4.34) | (1.96) |
| Proportion Manufacturing | | | 0.20234 ** | 0.13096 * |
| | | | (3.24) | (2.07) |
| Proportion Self-Employed | | | 0.56314 ** | 0.51852 ** |
| | | | (-2.51) | (2.83) |
| Proportion Professional | | | - | - |
| | | | 0.18581 ** | 0.00071 |
| | | | (-3.18) | (-0.01) |
| Adjusted $R^2$ | 0.5065 | 0.567 | 0.6367 | 0.6608 |
| n=190 | | | | |

Note: Parentheses display t-values

*Source: Brown University US2010 Longitudinal Tract Database*

# APPENDIX D

## CHAPTER 5 TABLES

Table 5.1 Study 2: Descriptive Results

| | 1990 | | 2000 | | 2010 | |
|---|---|---|---|---|---|---|
| | Mean | Std. Dev. | Mean | Std. Dev. | Mean | Std. Dev. |
| Never Married | 41.8% | 0.49 | 46.4% | 0.50 | 54.0% | 0.50 |
| Ever Married | 58.2% | 0.49 | 53.6% | 0.50 | 46.0% | 0.50 |
| Independent Variables | | | | | | |
| White | 70.4% | 0.46 | 60.5% | 0.49 | 60.2% | 0.49 |
| Black | 12.3% | 0.33 | 13.3% | 0.03 | 12.0% | 0.32 |
| Hispanic | 13.2% | 0.34 | 20.3% | 0.40 | 20.6% | 0.40 |
| Asian | 4.1% | 0.02 | 5.9% | 0.24 | 7.3% | 0.26 |
| Sex Ratio | n/a | n/a | 102.5% | 0.17 | 100.2% | 0.12 |
| Region | | | | | | |
| Northeast | 20.5% | 0.40 | 19.0% | 0.39 | 17.5% | 0.38 |
| Midwest | 21.3% | 0.41 | 20.7% | 0.41 | 20.1% | 0.40 |
| South | 31.3% | 0.46 | 33.1% | 0.47 | 35.2% | 0.48 |
| West | 25.8% | 0.44 | 26.2% | 0.44 | 26.3% | 0.44 |
| Income Segregation | 12.0% | 6.46 | 12.8% | 0.07 | 16.8% | 0.05 |
| Individual Controls | | | | | | |
| Female (Male=ref) | 50.5% | 0.50 | 50.2% | 0.50 | 49.1% | 0.50 |
| US Born | 85.0% | 0.36 | 78.3% | 0.41 | 79.3% | 0.41 |
| Education | | | | | | |
| Less than High School | 1.2% | 0.32 | 12.9% | 0.33 | 9.6% | 0.29 |
| High School | 32.0% | 0.47 | 36.1% | 0.48 | 31.0% | 0.46 |
| Some College | 33.4% | 0.47 | 25.3% | 0.43 | 26.9% | 0.44 |
| Bachelor's Degree or > | 22.6% | 0.42 | 25.8% | 0.44 | 32.6% | 0.47 |
| Age | | | | | | |
| 20-24 | 25.4% | 0.44 | 26.6% | 0.44 | 28.1% | 0.45 |
| 25-29 | 36.6% | 0.48 | 35.3% | 0.48 | 35.9% | 0.48 |
| 30-34 | 37.9% | 0.49 | 38.1% | 0.49 | 36.0% | 0.48 |
| Metropolitan Controls | | | | | | |
| Proportion Married | 42.8% | 0.03 | 42.1% | 0.02 | 39.0% | 0.02 |
| Proportion Manufacturing | 8.3% | 0.08 | 6.1% | 0.03 | 4.8% | 0.02 |
| Proportion Service | 3.4% | 0.01 | 4.6% | 0.01 | 4.7% | 0.01 |
| Proportion Professional | 13.9% | 0.03 | 16.6% | 0.03 | 17.3% | 0.03 |
| Prop. HS Graduate | 33.9% | 0.09 | 29.1% | 0.05 | 26.3% | 0.04 |

Source: Integrated Public-Use Microdata, 1990, 2000, and 2010; US 2010 Longitudinal Tract Database, U.S. Census Summary File 3

Table 5.2 Region by Race-Ethnicity, Metropolitan Population
Ages 20-34: 1990-2010

| Panel A: South | 1990 | 2000 | 2010 | **Net Change** |
|---|---|---|---|---|
| White | 66.8% | 57.0% | 55.8% | **-10.9%** |
| Black | 18.6% | 19.9% | 17.9% | **-0.6%** |
| Hispanic | 12.7% | 17.0% | 21.6% | **9.0%** |
| Asian | 2.0% | 3.4% | 4.6% | **2.6%** |
| Total | 518,638 | 540,698 | 553,220 | |

| Panel C: Northeast | 1990 | 2000 | 2010 | **Net Change** |
|---|---|---|---|---|
| White | 75.5% | 66.0% | 65.1% | **-10.4%** |
| Black | 11.3% | 12.8% | 12.0% | **0.7%** |
| Hispanic | 9.5% | 14.6% | 14.5% | **4.9%** |
| Asian | 3.7% | 6.6% | 8.4% | **4.7%** |
| Total | 352,136 | 318,450 | 280,917 | |

| Panel D: Midwest | 1990 | 2000 | 2010 | **Net Change** |
|---|---|---|---|---|
| White | 82.9% | 75.0% | 75.9% | **-7.0%** |
| Black | 11.5% | 13.2% | 11.1% | **-0.5%** |
| Hispanic | 3.9% | 8.6% | 8.8% | **5.0%** |
| Asian | 1.7% | 3.3% | 4.2% | **2.5%** |
| Total | 351,708 | 335,870 | 313,094 | |

| Panel B: West | 1990 | 2000 | 2010 | **Net Change** |
|---|---|---|---|---|
| White | 60.5% | 49.6% | 51.2% | **-9.3%** |
| Black | 6.0% | 5.3% | 4.5% | **-1.5%** |
| Hispanic | 24.5% | 34.4% | 32.0% | **7.5%** |
| Asian | 9.0% | 10.6% | 12.2% | **3.2%** |
| Total | 426,844 | 426,868 | 414,599 | |

Source: Integrated Public-Use Microdata , 1990-2010

Table 5.3 Sex Ratios by Race/Ethnicity, ages 20-34 (Males per 100 Females), 2000 and 2010

| Race/Ethnicity | 2000 | 2010 | Change |
|---|---|---|---|
| White | 101 | 102 | 1 |
| Black | 88 | 90 | 2 |
| Hispanic | 117 | 109 | -8 |
| Asian | 97 | 74 | -23 |

Source: U.S. Census Bureau Summary File 3

Table 5.4 Income Segregation (Percentage Living in Poor Census Tracts) by Race/Ethnicity

| Race/Ethnicity | 1990 | 2000 | 2010 | Change 1990-2000 | Change 2000-2010 | **Net Change** |
|---|---|---|---|---|---|---|
| White | 11.4% | 11.9% | 15.8% | 0.5% | 3.9% | 4.4% |
| Black | 12.4% | 13.1% | 17.2% | 0.7% | 4.1% | 4.8% |
| Hispanic | 13.7% | 14.5% | 18.6% | 0.8% | 4.1% | 4.9% |
| Asian | 14.0% | 14.9% | 18.2% | 0.9% | 3.3% | 4.2% |

Source: Integrated Public-Use Microdata, 1990, 2000, and 2010; US 2010 Longitudinal Tract Database

Table 5.5 Logistic Regression Predicting Odds of Having Never Married

| | 1990 | | | | | |
|---|---|---|---|---|---|---|
| | Model 1 | | Model 2 | | Model 3 | |
| Race/Ethnicity (ref= White) | | | | | | |
| Black | 2.008 | *** | 2.484 | *** | 2.465 | *** |
| Hispanic | 0.909 | ** | 1.031 | | 1.081 | ** |
| Asian | 1.138 | ǂ | 1.413 | *** | 1.399 | *** |
| Individual Controls | | | | | | |
| Female (ref=male) | | | 0.561 | *** | 0.56 | *** |
| US Born (ref=foreign-born) | | | 1.385 | *** | 1.404 | |
| Education (ref=high school) | | | | | | |
| Less than High School | | | 1.105 | *** | 1.12 | *** |
| Some College | | | 1.261 | *** | 1.253 | *** |
| Bachelor's Degree or Higher | | | 1.744 | *** | 1.693 | *** |
| Age (ref=20-24) | | | | | | |
| 25-29 | | | 0.242 | *** | 0.241 | *** |
| 30-34 | | | 0.101 | *** | 0.1 | *** |
| Metropolitan Controls | | | | | | |
| Total Population | 1.023 | *** | 1.029 | *** | 1.018 | *** |
| Proportion Married | | | | | 0.993 | |
| Proportion Manufacturing | | | | | 1.014 | * |
| Proportion Self-Employed | | | | | 0.933 | ** |
| Proportion Professional | | | | | 0.994 | |
| Proportion High School Graduate or Less | | | | | 0.996 | |
| Sample size | | | 1,649,326 | | | |

*Source: Integrated Public-Use Micro Data, 5% files;*
Brown University US2010 Longitudinal Tract Database
Note: Coefficient presented as odds-ratios

Table 5.5 (Continued) Logistic Regression Predicting Odds of Having Never Married

| | 2000 | | | | | |
|---|---|---|---|---|---|---|
| | Model 1 | | Model 2 | | Model 3 | |
| Race/Ethnicity (ref= White) | | | | | | |
| Black | 1.871 | *** | 2.209 | *** | 2.136 | *** |
| Hispanic | 0.818 | *** | 0.982 | | 1.013 | |
| Asian | 1.111 | ł | 1.474 | *** | 1.447 | *** |
| Individual Controls | | | | | | |
| Female (ref=male) | | | 0.606 | *** | 0.604 | *** |
| US Born (ref=foreign-born) | | | 1.546 | *** | 1.586 | *** |
| Education (ref=high school) | | | | | | |
| Less than High School | | | 0.998 | | 1.003 | |
| Some College | | | 1.213 | *** | 1.206 | *** |
| Bachelor's Degree or Higher | | | 1.432 | *** | 1.377 | *** |
| Age (ref=20-24) | | | | | | |
| 25-29 | | | 0.275 | *** | 0.272 | *** |
| 30-34 | | | 0.115 | *** | 0.113 | *** |
| Metropolitan Controls | | | | | | |
| Total Population | 1.021 | *** | 1.031 | *** | 1.011 | ** |
| Proportion Married | | | | | 0.944 | *** |
| Proportion Manufacturing | | | | | 1.015 | * |
| Proportion Self-Employed | | | | | 1.053 | * |
| Proportion Professional | | | | | 0.988 | |
| Proportion High School Graduate or Less | | | | | 1.032 | *** |
| Sample size | | | 1,621,886 | | | |

*Source: Integrated Public-Use Micro Data, 5% files;*
Brown University US2010 Longitudinal Tract Database
Note: Coefficient presented as odds-ratios

Table 5.5 (Continued) Logistic Regression Predicting Odds of Having Never Married

| | 2010 | | | | | |
|---|---|---|---|---|---|---|
| | Model 1 | | Model 2 | | Model 3 | |
| Race/Ethnicity (ref=White) | | | | | | |
| Black | 2.116 | *** | 2.538 | *** | 2.478 | *** |
| Hispanic | 0.851 | *** | 1.082 | ł | 1.146 | ** |
| Asian | 0.906 | ł | 1.41 | *** | 1.437 | *** |
| Individual Controls | | | | | | |
| Female (ref=male) | | | 0.604 | *** | 0.602 | *** |
| US Born (ref=foreign born) | | | 1.823 | *** | 1.9 | *** |
| Education (ref=high school) | | | | | | |
| Less than High School | | | 1.13 | *** | 1.129 | *** |
| Some College | | | 1.082 | *** | 1.084 | *** |
| Bachelor's Degree or Higher | | | 1.08 | * | 1.047 | |
| Age (ref=20-24) | | | | | | |
| 25-29 | | | 0.243 | *** | 0.24 | *** |
| 30-34 | | | 0.087 | *** | 0.085 | *** |
| Metropolitan Controls | | | | | | |
| Total Population | 1.022 | *** | 1.033 | *** | 1.017 | *** |
| Proportion Married | | | | | 0.979 | * |
| Proportion Manufacturing | | | | | 0.992 | |
| Proportion Self-Employed | | | | | 1.088 | *** |
| Proportion Professional | | | | | 1.091 | *** |
| Proportion High School Graduate or Less | | | | | 1.041 | *** |
| Sample size | | | 1,554,726 | | | |

*Source: Integrated Public-Use Micro Data, 5% files;*
Brown University US2010 Longitudinal Tract Database
Note: Coefficient presented as odds-ratios

Table 5.6 Logistic Regression Predicting Having Never Married (Region), 2000

| | 2000 | | | |
|---|---|---|---|---|
| | Model 1 | | Model 2 | |
| Race/Ethnicity (ref=White) | | | | |
| Black | 2.242 | *** | 2.3331 | *** |
| Hispanic | 1.029 | | 1.1304 | *** |
| Asian | 1.433 | *** | 1.6466 | *** |
| Region (ref=south) | | | | |
| Northeast | 1.403 | *** | 1.4785 | *** |
| Midwest | 1.245 | *** | 1.2621 | *** |
| West | 1.266 | *** | 1.3547 | *** |
| Northeast*Black | | | 0.8854 | *** |
| Northeast*Hispanic | | | 0.9111 | ł |
| Northeast*Asian | | | 0.6265 | *** |
| Midwest*Black | | | 1.1242 | * |
| Midwest*Hispanic | | | 0.8876 | |
| Midwest*Asian | | | 0.7902 | ** |
| West*Black | | | 0.7022 | *** |
| West*Hispanic | | | 0.8214 | ** |
| West*Asian | | | 0.9511 | |
| Individual Controls | | | | |
| Female (ref=male) | 0.603 | *** | 0.603 | *** |
| US Born (ref=foreign-born) | 1.573 | *** | 1.569 | *** |
| Education (ref=high school) | | | | |
| Less than High School | 1.008 | | 1.01 | |
| Some College | 1.206 | *** | 1.205 | *** |
| Bachelor's Degree or Higher | 1.387 | *** | 1.388 | *** |
| Age (ref=20-24) | | | | |
| 25-29 | 0.272 | *** | 0.272 | *** |
| 30-34 | 0.112 | *** | 0.112 | *** |
| Metropolitan Controls | | | | |
| Total Population | 1.002 | | 1.003 | |
| Proportion Married | 0.936 | *** | 0.936 | *** |
| Proportion Manufacturing | 1.002 | | 1.002 | |
| Proportion Self-Employed | 1.077 | ** | 1.08 | *** |
| Proportion Professional | 1.002 | | 1.005 | |
| Proportion High School Graduate or Less | 1.036 | *** | 1.037 | *** |
| Sample size | 1,621,886 | | | |

Source: Integrated Public-Use Micro Data, 5% files;
Brown University US2010 Project Longitudinal Tract Database
*Note: Coefficient presented as odds-ratios*

Table 5.7 Logistic Regression Predicting Odds of Having Never Married (Sex Ratios), 2000

| | 2000 | | | |
|---|---|---|---|---|
| | Model 1 | | Model 2 | |
| Race/Ethnicity (Ref=White) | | | | |
| Black | 2.095 | *** | 3.8344 | *** |
| Hispanic | 1.039 | | 1.5302 | |
| Asian | 1.432 | *** | 1.8521 | |
| Sex Ratio | 0.846 | * | 1.2853 | |
| Sex Ratio*Black | | | 0.5372 | * |
| Sex Ratio*Hispanic | | | 0.6811 | |
| Sex Ratio*Asian | | | 0.7851 | |
| Individual Controls | | | | |
| Female (ref=male) | 0.603 | *** | 0.604 | *** |
| US Born (ref=foreign-born) | 1.578 | *** | 1.582 | *** |
| Education (ref=high school) | | | | |
| Less than High School | 1.005 | | 1.005 | |
| Some College | 1.205 | *** | 1.206 | *** |
| Bachelor's Degree or Higher | 1.377 | *** | 1.378 | *** |
| Age (ref=20-24) | | | | |
| 25-29 | 0.272 | *** | 0.272 | *** |
| 30-34 | 0.113 | *** | 0.113 | *** |
| Metropolitan Controls | | | | |
| Total Population | 1.01 | *** | 1.011 | *** |
| Proportion Married | 0.945 | *** | 0.945 | *** |
| Proportion Manufacturing | 1.016 | ** | 1.016 | ** |
| Proportion Self-Employed | 1.051 | * | 1.054 | * |
| Proportion Professional | 0.984 | | 0.991 | |
| Proportion High School Graduate or Less | 1.031 | *** | 1.033 | *** |
| Sample size | 1,621,886 | | | |

Source: Integrated Public-Use Micro Data, 5% files;
Brown University US2010 Project Longitudinal Tract Database
*Note: Coefficient presented as odds-ratios*

Table 5.8 Logistic Regression Predicting Odds of Having Never Married (Income Segregation), 2000

| | 2000 | | | |
|---|---|---|---|---|
| | Model 1 | | Model 2 | |
| Race/Ethnicity (ref= White) | | | | |
| Black | 2.136 | *** | 2.1468 | *** |
| Hispanic | 1.013 | | 1.1761 | ** |
| Asian | 1.447 | *** | 1.8733 | *** |
| Income Segregation | 1.001 | | 1.0034 | |
| Income Segregation*Black | | | 0.9994 | |
| Income Segregation*Hispanic | | | 0.989 | * |
| Income Segregation*Asian | | | 0.982 | * |
| Individual Controls | | | | |
| Female (ref=male) | 0.604 | *** | 0.604 | *** |
| US Born (ref=foreign-born) | 1.587 | *** | 1.585 | *** |
| Education (ref=high school) | | | | |
| Less than High School | 1.002 | | 1.003 | |
| Some College | 1.206 | *** | 1.206 | *** |
| Bachelor's Degree or Higher | 1.377 | *** | 1.374 | *** |
| Age (ref=20-24) | | | | |
| 25-29 | 0.272 | *** | 0.272 | *** |
| 30-34 | 0.113 | *** | 0.113 | *** |
| Metropolitan Controls | | | | |
| Total Population | 1.01 | *** | 1.012 | *** |
| Proportion Married | 0.944 | *** | 0.943 | *** |
| Proportion Manufacturing | 1.014 | * | 1.016 | * |
| Proportion Self-Employed | 1.053 | * | 1.062 | * |
| Proportion Professional | 0.989 | | 0.991 | |
| Proportion High School Graduate or Less | 1.032 | *** | 1.033 | *** |
| Sample size | 1,621,886 | | | |

Source: Integrated Public-Use Micro Data, 5% files
Brown University US2010 Project Longitudinal Tract Database
*Note: Coefficient presented as odds-ratios*

APPENDIX E

CHAPTER 6 TABLES

Table 6.1 Study 3: Descriptive Results

| | Mean | Std. Dev. |
|---|---|---|
| Intermarried | 3.3% | 0.18 |
| Not Intermarried | 96.7% | 0.18 |
| Independent Variables | | |
| White | 66.2% | 0.47 |
| Black | 6.9% | 0.25 |
| Hispanic | 0.2% | 0.21 |
| Asian | 5.6% | 0.06 |
| Region | | |
| Northeast | 16.9% | 0.38 |
| Midwest | 21.8% | 0.22 |
| South | 35.1% | 0.48 |
| West | 26.0% | 0.44 |
| Individual Controls | | |
| US Born | 77.0% | 0.42 |
| Education | | |
| Less than High School | 11.3% | 0.32 |
| High School | 33.7% | 0.47 |
| Some College | 24.3% | 0.43 |
| Bachelor's Degree or Higher | 30.7% | 0.31 |
| Age | | |
| 20-24 | 19.6% | 0.40 |
| 25-29 | 43.3% | 0.50 |
| 30-34 | 37.2% | 0.48 |
| Metropolitan Controls | | |
| Proportion Married | 42.2% | 2.11 |
| Proportion College Graduate | 17.2% | 4.25 |
| Proportion Manufacturing | 6.2% | 2.57 |
| Proportion Service | 4.6% | 0.70 |
| Proportion Professional | 16.5% | 16.46 |
| Proportion High School Graduate | 29.1% | 4.63 |

n= 268,443 (unweighted)
Source: Integrated Public-Use Micro Data, 5% files
Brown University US2010 Project Longitudinal Tract Database

Table 6.2 Share of Young Women Currently Intermarried by Region, 2000

| | |
|---|---|
| Northeast | 11.1% |
| Midwest | 12.8% |
| South | 31.4% |
| West | 44.7% |

n=268,443(unweighted)
Source: Integrated Public-Use Microdata, 2000

Table 6.3 Percentage of Women Currently Intermarried by Race and Region, 2000

| | |
|---|---|
| Panel A: White | |
| Northeast | 8.3% |
| Midwest | 16.0% |
| South | 32.2% |
| West | 43.3% |
| n=3162 | |
| | |
| Panel B: Black | |
| Northeast | 22.2% |
| Midwest | 7.1% |
| South | 39.0% |
| West | 31.5% |
| n=238 | |
| | |
| Panel C: Hispanic | |
| Northeast | 12.3% |
| Midwest | 11.0% |
| South | 31.4% |
| West | 44.9% |
| n=5026 | |
| | |
| Panel D: Asian | |
| Northeast | 11.6% |
| Midwest | 5.8% |
| South | 19.3% |
| West | 63.3% |
| n=363 | |

Source: Integrated Public-Use Microdata Series, 2000
*Note: Sample is unweighted*

Table 6.4 Logistic Regression Predicting the Log-Odds of Racial/Ethnic Intermarriage, 2000

| | 2000 | | | | | |
|---|---|---|---|---|---|---|
| | Model 1 | | Model 2 | | Model 3 | |
| Race/Ethnicity (ref=White) | | | | | | |
| Black | 0.694 | *** | 0.689 | ** | 0.687 | ** |
| Hispanic | 5.317 | *** | 9.599 | *** | 8.568 | *** |
| Asian | 1.301 | *** | 2.761 | *** | 2.413 | *** |
| Individual Controls | | | | | | |
| US Born (ref=foreign-born) | | | 2.463 | *** | 2.482 | *** |
| Employ (ref=unemployed) | | | 1.204 | *** | 1.211 | *** |
| Education (ref=high school) | | | | | | |
| Less than High School | | | 0.5 | *** | 0.502 | *** |
| Some College | | | 1.267 | *** | 1.245 | *** |
| Bachelor's Degree or Higher | | | 0.897 | * | 0.892 | * |
| Age (ref=20-24) | | | | | | |
| 25-29 | | | 0.895 | ** | 0.912 | * |
| 30-34 | | | 0.839 | *** | 0.859 | *** |
| Metropolitan Controls | | | | | | |
| Total Population | 0.997 | | 1.005 | | 1.006 | |
| Proportion Married | | | | | 1.003 | |
| Proportion College Degree or higher | | | | | 1.066 | * |
| Proportion Manufacturing | | | | | 0.983 | |
| Proportion Self-Employed | | | | | 1.035 | |
| Proportion Professional | | | | | 0.875 | *** |
| Proportion High School Graduate or Less | | | | | 0.931 | *** |
| Sample size (weighted) | | | 536,886 | | | |

Source: Integrated Public-Use Micro Data Series, 5% files; Brown University US2010 Longitudinal Tract Database

*Note: Coefficient presented as odds-ratios*

Table 6.5 Logistic Regression Predicting the Log-Odds of Racial/Ethnic Intermarriage (Region), 2000

| | 2000 | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Model 1 | | Model 2 | | Model 3 | | Model 4 | |
| Race/Ethnicity (ref=White) | | | | | | | | |
| Black | | | 0.724 | *** | 0.718 | * | 0.699 | ** |
| Hispanic | | | 4.754 | *** | 8.595 | *** | 8.485 | *** |
| Asian | | | 1.185 | | 2.445 | *** | 2.343 | *** |
| Region (ref=south) | | | | | | | | |
| Northeast | 0.331 | *** | 0.644 | ** | 0.578 | *** | 0.713 | * |
| Midwest | 0.381 | *** | 0.599 | *** | 0.591 | *** | 0.729 | ** |
| South | 0.576 | *** | 0.672 | *** | 0.66 | *** | 0.779 | ** |
| Individual Controls | | | | | | | | |
| US Born (ref=foreign-born) | | | | | 2.47 | *** | 2.482 | *** |
| Employ (ref=unemployed) | | | | | 1.209 | *** | 1.211 | *** |
| Education (ref=high school) | | | | | | | | |
| Less than High School | | | | | 0.49 | *** | 0.502 | *** |
| Some College | | | | | 1.267 | *** | 1.245 | *** |
| Bachelor's Degree or Higher | | | | | 0.923 | | 0.892 | * |
| Age (ref=20-24) | | | | | | | | |
| 25-29 | | | | | 0.9 | ** | 0.912 | * |
| 30-34 | | | | | 0.848 | *** | 0.859 | *** |
| Metropolitan Controls | | | | | | | | |
| Total Population | 0.025 | ** | 0.996 | | 1.006 | | 1.006 | |
| Proportion Married | | | | | | | 1.003 | |
| Proportion College Degree or higher | | | | | | | 1.066 | * |
| Proportion Manufacturing | | | | | | | 0.983 | |
| Proportion Self-Employed | | | | | | | 1.035 | |
| Proportion Professional | | | | | | | 0.875 | *** |
| Proportion High School Graduate or Less | | | | | | | 0.931 | *** |
| Sample size (weighted) | | | | | 536,886 | | | |

Source: Integrated Public-Use Micro Data, 5% files;
Brown University US2010 Longitudinal Tract Database
*Note: Coefficient presented as odds-ratios*

Table 6.6 Logistic Regression Predicting the Log-Odds of Racial/Ethnic Intermarriage (Race/Region Interactions), 2000

| | Model 1 | |
|---|---|---|
| Race/Ethnicity (ref=White) | | |
| Black | 1.169 | |
| Hispanic | 4.8535 | *** |
| Asian | 1.9451 | *** |
| Region (ref=south) | | |
| Northeast | 0.282 | *** |
| Midwest | 0.3464 | *** |
| South | 0.52 | ** |
| Interactions | | |
| Black*Midwest | 0.3182 | *** |
| Black*South | 0.4264 | *** |
| Black*Northeast | 1.775 | * |
| Hispanic*Midwest | 4.0617 | ** |
| Hispanic*South | 1.7456 | |
| Hispanic*Northeast | 4.4185 | *** |
| Asian*Midwest | 1.0576 | |
| Asian*South | 1.306 | |
| Asian*Northeast | 1.3942 | * |
| Individual Controls | | |
| US Born (ref=foreign-born) | 2.501 | *** |
| Employ (ref=unemployed) | 1.212 | *** |
| Education (ref=high school) | | |
| Less than High School | 0.506 | *** |
| Some College | 1.228 | *** |
| Bachelor's Degree or Higher | 0.9 | * |
| Age (ref=20-24) | | |
| 25-29 | 0.921 | * |
| 30-34 | 0.872 | *** |
| Metropolitan Controls | | |
| Total Population | 1.004 | |
| Proportion Married | 0.999 | |
| Proportion College Degree or higher | 1.02 | |
| Proportion Manufacturing | 0.986 | |
| Proportion Self-Employed | 0.967 | |
| Proportion Professional | 0.967 | |
| Proportion High School Graduate or Less | 0.972 | |
| Sample size (weighted) | 536886 | |

Source: Integrated Public-Use Micro Data, 5% files;
Brown University US2010 Longitudinal Tract Database
*Note: Coefficient presented as odds-ratios*